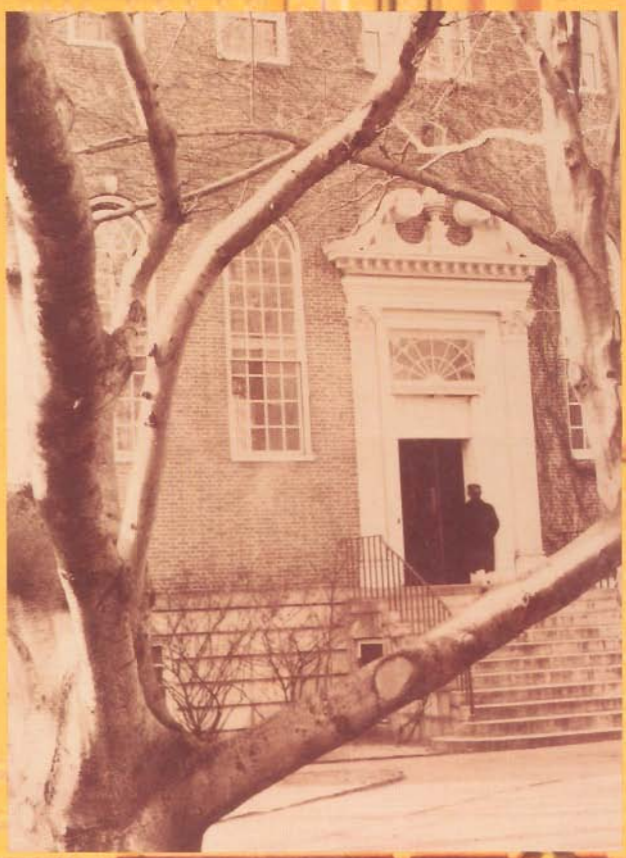
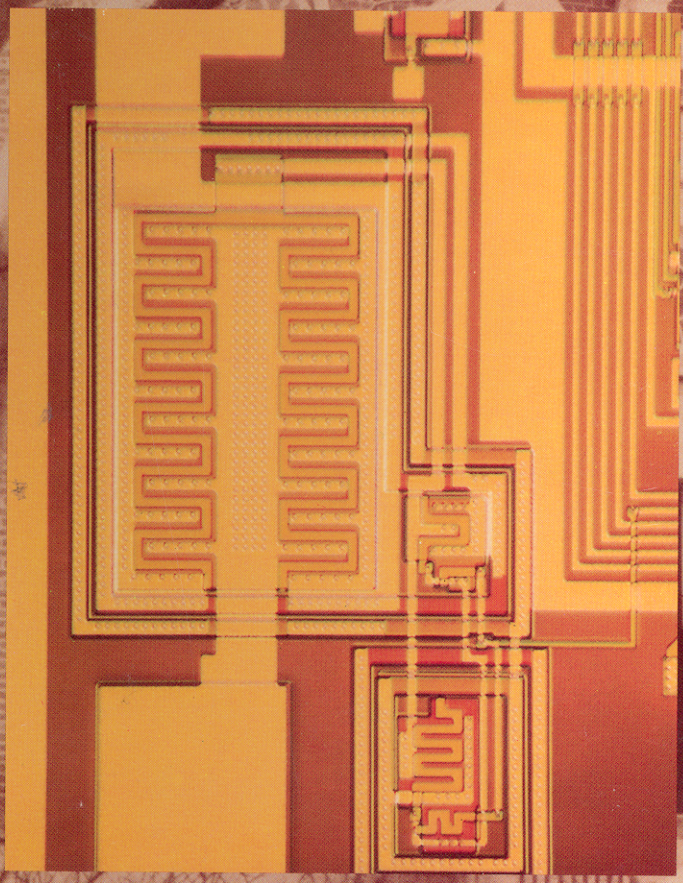


This 1946 sepia photograph of Harvard Yard was used to illustrate Edwin Land's first paper on one-step photography.

This photomicrograph of a detail of an integrated circuit was created at Polaroid's Microelectronics Laboratory, Polaroid Type 59 Polacolor ER, by William Saunders.

Polaroid® ACCESS® Fifty Years

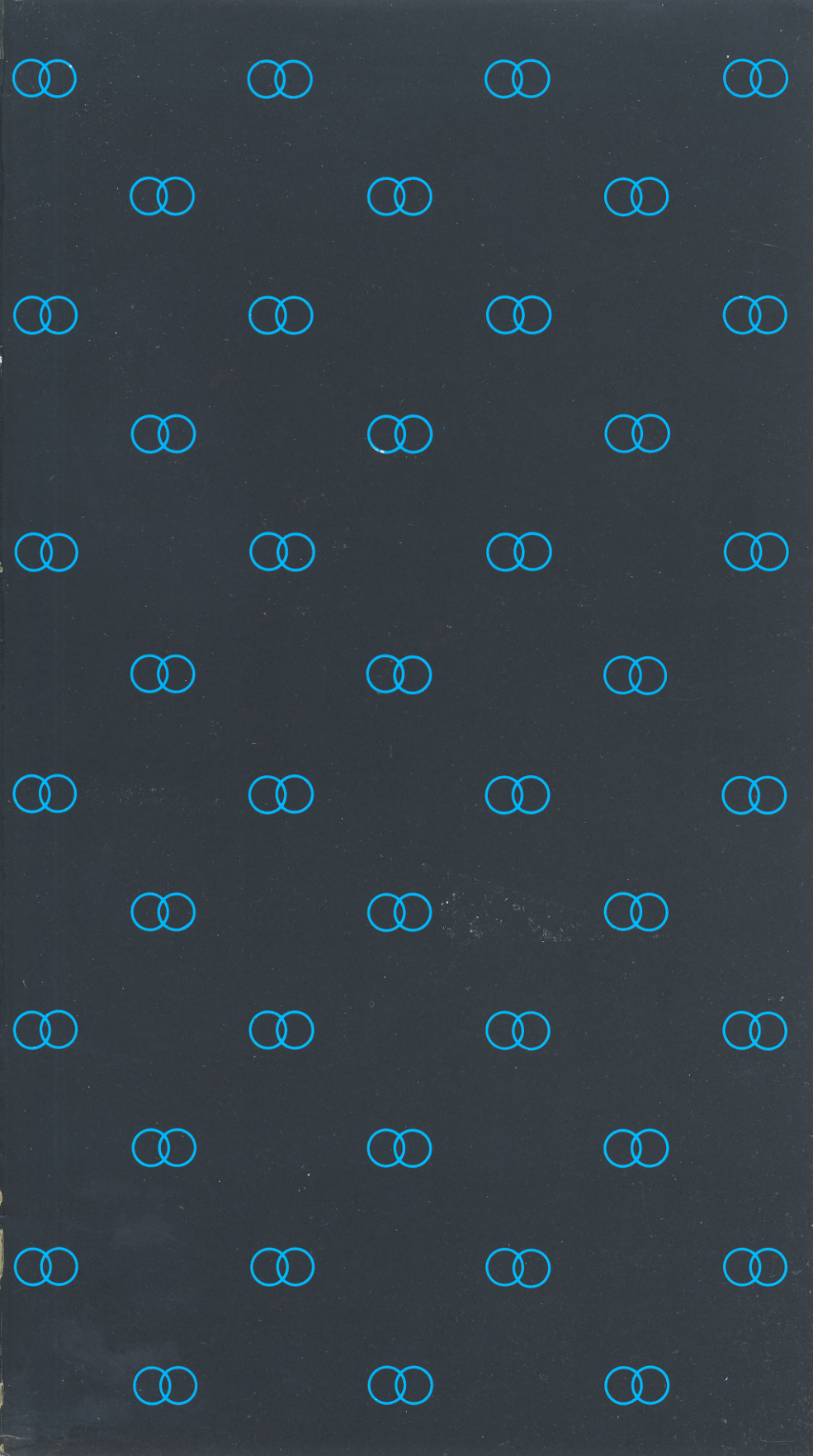


Richard Saul Wurman

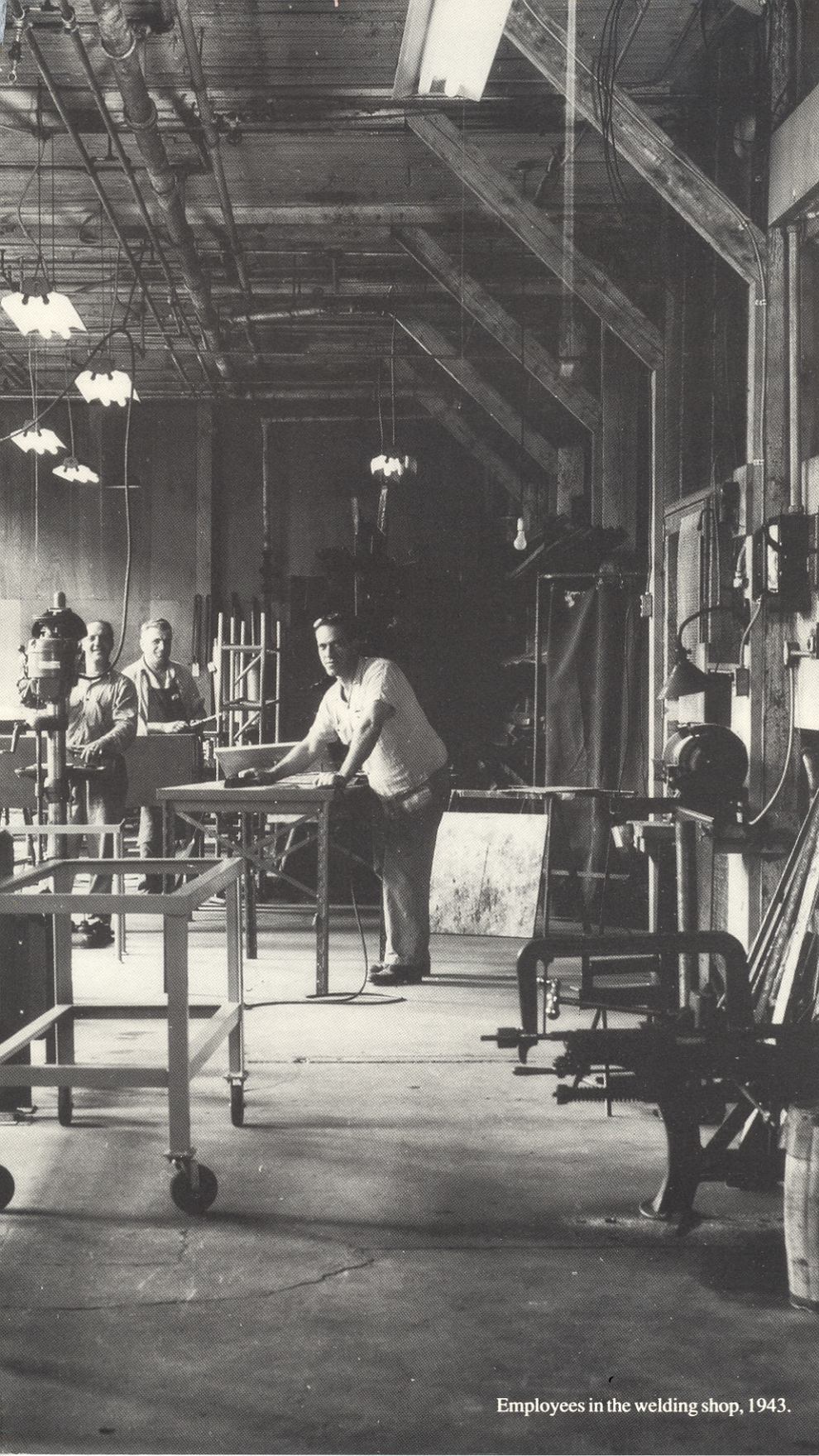
Polaroid® ACCESS® Fifty Years

Richard Saul Wurman

ACCESS® Press Ltd.



Edwin Land's laboratory office, 1950.



Employees in the welding shop, 1943.

1937-1946

1947-1956

1957-1966

1967-1976

1977-1987

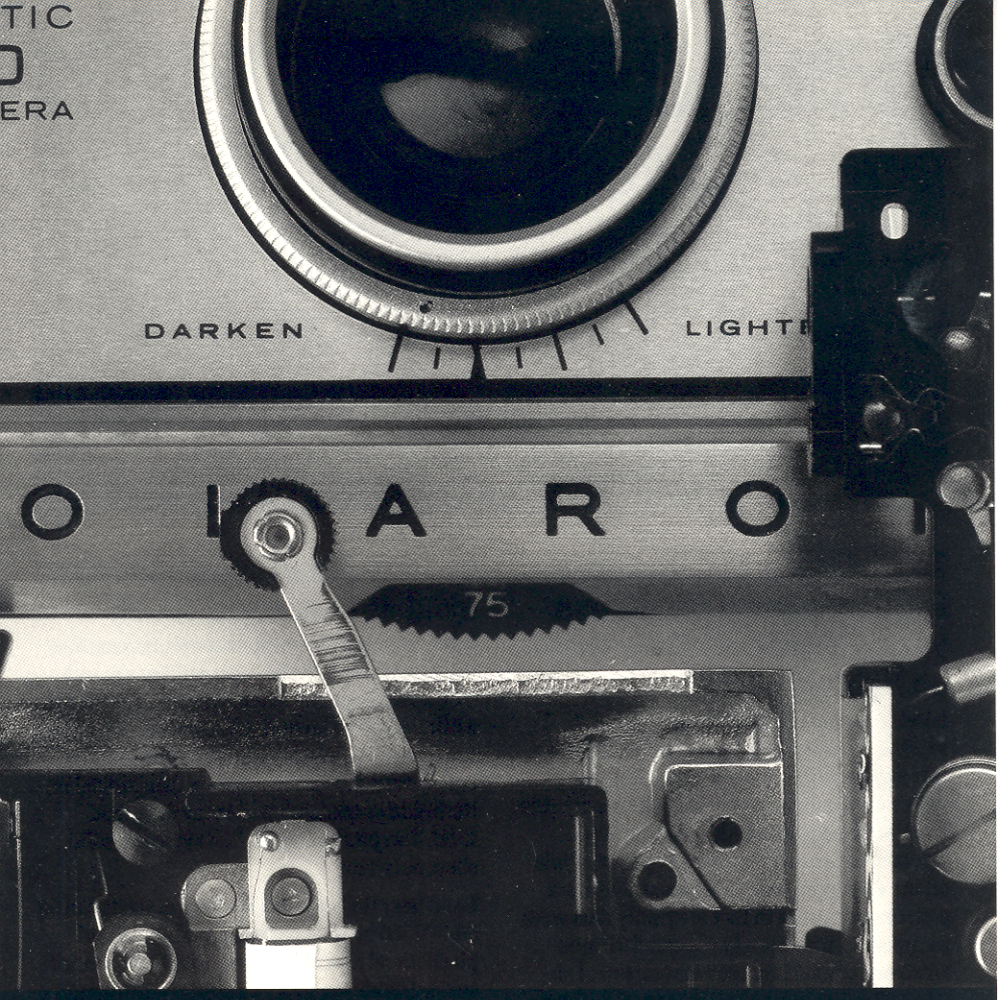
Polaroid ACCESS®
is a photo album and scrapbook commemorating the first fifty years of the Polaroid Corporation.

Throughout its history Polaroid has set itself three goals: to offer quality products to a wide public, to insure employees of a fair and challenging work experience, and to create an environment for advanced research. The structure of this book reflects this agenda: at the top of each page products, packaging, and advertising are presented.

The black band which runs throughout the middle of the book presents the ongoing efforts of research: chemistry, engineering, electronics, and optics.

At the bottom of the page news of the corporation is presented: the growth of sales, subsidiaries, and facilities, the establishment of new social and educational programs to benefit employees, the community, and the arts.

As a footnote, headlines from the Boston Globe, Polaroid's hometown newspaper, give a sense of wider changes occuring at the national level.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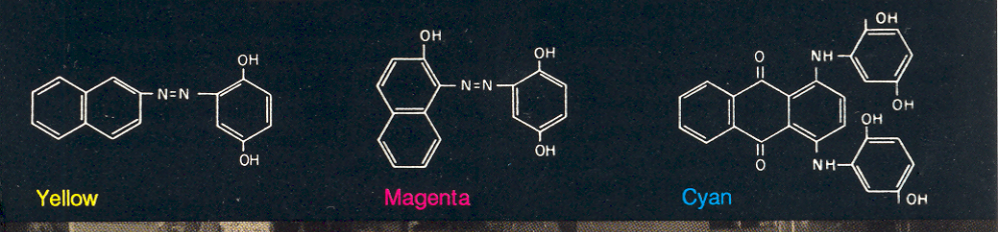
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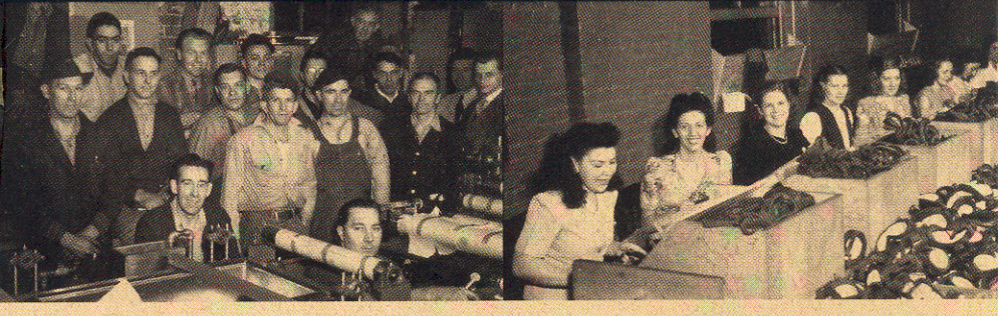


Globe

1926: Edwin H. Land leaves Harvard after his freshman year to pursue his own work on light polarization.

Land is interested in the discovery of Dr. William Bird Herapath, who in 1852 found that the tiny crystals formed by combining iodine with quinine salt possessed remarkable light-polarizing properties. At first some layers of the crystals appeared opaque, while others were perfectly transparent. But Herapath observed that in fact all the crystals were transparent; they merely appeared opaque when one crystal lay crosswise on top of another. The opacity was a function of the crystals being turned in relationship to each other.

Herapath attempted to make an iodoquinine crystal $\frac{1}{8}$ inch in diameter—large enough to use as a filter for his microscope. However, he failed and herapathite crystals of a practical size remained elusive for some 70 years.

It is a classic scientific problem, which Land solves with a novel reappraisal of the issue.

Instead of trying to make larger crystals, he proposes to align thousands of smaller crystals in a single direction on a transparent sheet. He believes this might eventually result in a continuous sheet or some segments large enough to serve multiple applications.

The alignment itself becomes the central question in Land's research. For the sheet to have the same optical properties as a large, single herapathite crystal, the crystals have to be contiguous and almost perfectly aligned.

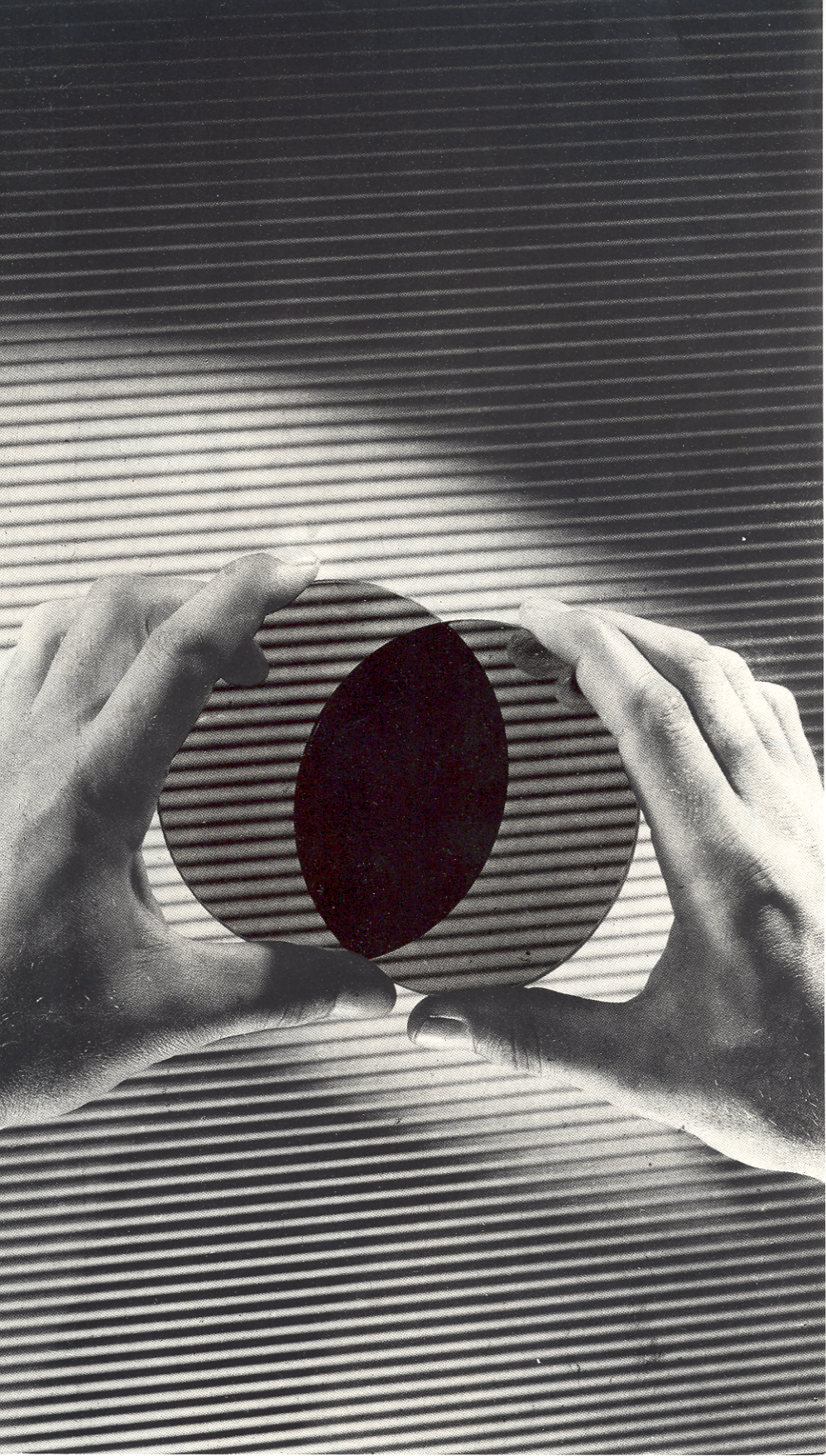
In **1928** Land creates the first synthetic sheet polarizer.

It is composed of submicroscopic herapathite crystals which have been ground for a month in a laboratory mill. The crystals, suspended in a nitrocellulose lacquer solution, are subjected to a magnetic field which orients them all in one direction. A plastic sheet is then dipped in the liquid suspension within the magnetic field, thus producing the first synthetic solid sheet polarizer.

Land later finds that herapathite crystals can be embedded in other cellulosic polymers and plastics and that they can be oriented by one of several methods: an electrostatic field, a magnetic field, or a simple extrusion operation that aligns the submicroscopic particles in parallel formation. Hardening the cellulosic polymers *freezes* the process, and the sheet is sealed protectively between layers of another transparent plastic.

Land files the patent for the first synthetic polarizer on April 26, **1929**.

Its uses include photographic filters, sunglasses, and glare-reducing airplane windows. It will be sold in 1934 as a Land-Wheelwright product and later, in 1937, will be the first product of the Polaroid Corporation. Land returns to Harvard in 1929 to further his studies and continue polarizer research.



In **1932** Edwin Land leaves Harvard and with Harvard physics section leader George Wheelwright, III, establishes the Land-Wheelwright Laboratories to continue research and to manufacture polarizers.

The first lab is located in Wellesley Hills, Massachusetts, where the earliest sheet polarizers are produced. Over the years, the lab moves to the Back Bay section of Boston, later to Columbus Avenue, and finally to Cambridge, where corporate headquarters remain.

Land-Wheelwright Laboratories is incorporated in **1933** to manufacture polarizers and to continue research into applications of polarizers in sunglasses, photographic and microscopic filters, and automobile headlights.

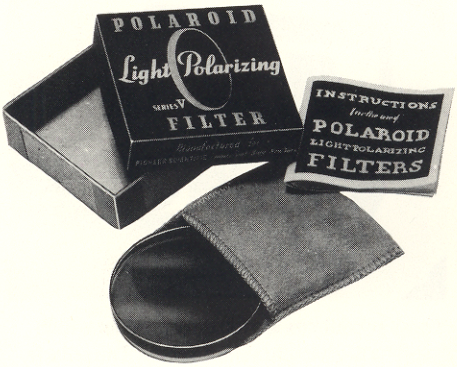
Land is issued the patent covering synthetic sheet polarizers formed of parallel-oriented submicroscopic crystals embedded in plastic film. The product is known as J-sheet.

Land-Wheelwright Laboratories' first product is a thin transparent film that combs all the light vibrations so they vibrate in parallel planes. A beam of ordinary light is like random waves moving helter-skelter along a rope tied at one end and moving about in all directions at the other. If the rope passes through a gap in a picket fence, all of the vibrations will not get through, but those that do will be parallel to the gaps between the palings. In practice, the light beam's *fence* is a polarizer. After it passes through, its vibrations are arranged in the same plane, making them controllable. When a second polarizer *fence* is placed in the path of the light beam, the vibrations are halted, and no light passes through.

Land's paper, entitled *A New Polarizer for Light in the Form of an Extensive Synthetic Sheet*, is presented to the Harvard University Physics Colloquium. He is the first undergraduate to be extended such an invitation.

In **1934** Eastman Kodak signs a contract with Sheet Polarizer Co., Inc., to purchase light polarizers for the manufacture of photographic filters.

This first order is filled by Land, his wife, Helen, Ernest Calabro, Bob Blake, and George Wheelwright.

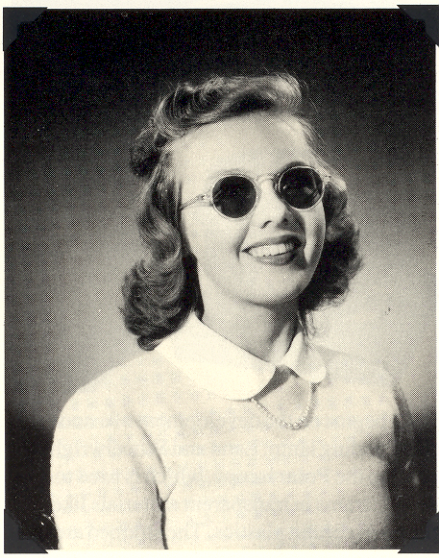


In **1935** Land displays his invention to a representative of the American Optical Company.

Land places a bowl of goldfish beside the window so the sun shines through, making it impossible to see the fish. Revealing the value of his invention, he places his sheet polarizer in front of the bowl so that the swimming fish can be seen clearly. The polarizer removes the glare.

The American Optical Company signs a license agreement to use the polarizers for the manufacture of sunglasses.

This is the first popular product to make use of the polarizer material.



The public announcement of the invention of polarizing disks is made at the Waldorf Astoria Hotel in **1935**.

The trademark *Polaroid* and the trademark **logo** of intersecting polarizing disks are adopted. The New York Museum of Science and Industry establishes a permanent exhibit demonstrating the applications of light polarizers.

At the end of 1935, the first polarizer advertisement appears in a scientific journal, and Land receives the Hood Medal from the Royal Photographic Society.

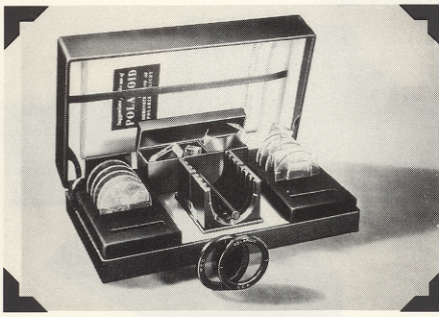
In **1935** Land-Wheelwright Laboratories begins development of commercial products, while expanding its program of scientific and educational equipment.

Work begins on the development of a non-glare reading lamp. Land and Wheelwright develop the **Polariscope**, which is used to detect strains in transparent materials like glass and certain plastics. The strained areas appear colored when seen by polarized light. Richard Kriebel persuades the Glass Manufacturers to adopt the Polariscope. Kriebel also convinces A.C. Gilbert and the Porter Manufacturing Company to make polarizer toy microscopes.

The company moves from the cellar at Dartmouth Street to an upper floor. However, by September 1936 it becomes necessary to find new space at 285 Columbus Avenuec, on the other side of Back Bay Station.

By **1936** Land-Wheelwright Laboratories has polarizer sales in three areas:

sunglasses (through the 1935 American Optical contract), camera filters (through the 1934 Eastman Kodak contract), and **school kits**—a set of materials demonstrating the characteristics of light polarization.



These school kits are the only product which Land-Wheelwright sells directly. The polarizing filters in the school kits and thesunglasses are flat glass/ polarizer/glass laminates.

Land-Wheelwright Laboratories demonstrates **antiglare automobile headlights** at Harvard Yard in Cambridge. The Ford Coupe in the lower picture is equipped with Polaroid polarizing headlights, the one in the upper with conventional headlights.

Land is a proponent of educational and philosophical ideas, and his thoughts on industry are equally innovative. In 1936 employees of Land-Wheelwright become entitled to sick pay and Christmas bonuses.

CHRISTIAN SCIEN
AN INTERNATIONAL DAILY NEWSPAPER
BOSTON, THURSDAY, JANUARY 30, 1936—VOL. XX

Field for One-Way Glass Broadens

Makes Three Dimensional Movies Possible and Detects Weak Steel

Averts Light Glare

By a Staff Correspondent of The Christian Science Monitor

NEW YORK, Jan. 30—Glass which removes the glare from automobile headlights, makes life-like three-dimensional movies available and gives work, was demonstrated for the first time here today before a group of natural scientists at the Waldorf-Astoria. The new glass, in addition to other manifold uses, also enables engineers to detect weaknesses in steel construction work.

Just as the telescope and microscope aided human eyes in extending their limits of far and near vision, so the glass, invented by Edwin H. Land, of Boston will extend ordinary vision, and by removing glare and unnecessary light rays which befog ordinary sight, give exceptionally clear-eye pictures of ordinary things.

According to theory, light travels in waves like ripples from a stone cast into a mill-pond.

Smooths Out Ripples

Instead of water, its medium is the atmosphere and every dust particle, every gaseous molecule is a "stone in the mill-pond" causing these light waves to travel helter skelter every which way. Polaroid, the new glass, combs out these waves or polarizes them, making them all travel in the same way as though they were vehicles on a one-way multi-lane highway.

To all outward appearances it is a clear, colorless glass, and light which has passed through polaroid looks like ordinary light.

Traffic experts, however, learned differently, and many predicted it would only be a comparatively short time before automobile headlights and windshields were equipped with this new glass.

Cut Out all Glare

seemed almost out, although objects between the two sets of lights

block the glare completely. Actu read tests have shown that not onl

Technician Displays Polarized Glass

Two Overlapping Circles Make Up Polaroid Glass. Either One Alone Is Transparent, but in Combination They Throw a "Cloak of Invisibility" Over Objects on the Wrong Side. The Technician Can See Through That Glass Perfectly, but as Light Will Travel Through It in Only One Direction, He Becomes Invisible

INVENTOR ENDS PERIL OF AUTO HEADLIGHTS

New Glass Expected to Revolutionize Many Fields

By L. E. LEVICK.

Non-glare auto headlights, giving night driving daytime security and comfort.

Three dimension movies in natural color, giving the screen the "flesh and blood reality" and depth of the stage.

"One-way glass" for apartment privacy and a new kind of light that enables doctors and beauty specialists to look below the surface of the skin.

These "modern miracles" were publicly demonstrated here today, for the first time, by a young Boston scientist of 27, who has made them possible by his invention of a new type of glass, called polaroid.

THRILLS CROWD.

He is Edwin H. Land, a slight, dark-haired youth, modest and smiling, who came down from his laboratories in the Hub city to "conquer New York" and thrilled scientists and editors with his demonstration at the Waldorf-Astoria.

What he has invented, he explained, is a "glass sandwich" — two "slives" of ordinary glass, "buttered" with colorless cement, filled with a cellulosic film only a few thousands of an inch thick. This film does the trick.

It contains infinitesimal crystals, invisible even under a powerful microscope, which act as an "optical comb," straightening out the kinky waves of light as they pass through. One square inch of the film contains one thousand billion of the tiny crystals.

Instead of the eye seeing all the waves of light, which run in all directions like unruly hair, polaroid lets through only the up-and-down waves that can pass between the teeth of this "light comb." Turn the new glass around, and only sire-to-side waves can pass through.

AID TO MOVIES

New 'Glass' Cuts Glare of Light; Aid to Movies and Science Seen

Inventor Shows Polarizing Substance Which, With Spectacles of Same Material, Dims Brilliance of Auto Lamps— May Be Used in Beauty Treatments.

A light-polarizing "glass" that transforms motion pictures into a fairyland of substance and reality, appears adequately to solve the problem of automobile headlight glare, clarifies problems of facial beauty treatment hitherto unfathomable, and aids human vision in many other ways was shown in New York yesterday for the first time.

All who witnessed the demonstration of the powers of the new substance, called "polaroid," regarded it as one of the most remarkable inventions in many years of optical development work.

In engineering and design work the new "glass," which is not glass at all but a cellulose-acetate material that displays remarkable optical properties, is expected to become a valuable tool to aid in detecting stresses and defects in aircraft, bridge building and other lines of structural construction. It also was described as an invaluable aid to scientific research workers.

The inventor is Edwin H. Land, a young Boston scientist. Mr. Land explained the features of his development yesterday before a group of newspaper men and guests at the Waldorf-Astoria Hotel.

Previous Method Expensive.

"The idea of utilizing polarized light is not new," said Mr. Land, "but previous means of accomplishing this involved the use of complicated and expensive material. 'Polaroid,' on the other hand, is a material that possesses

lights pieces of the material were placed in the lamps between the electric bulb and the glass in front. Visitors were seated before the lamps at a distance of a dozen feet. The light from the "polaroid" was blinding. However, when spectacles utilizing lenses of the polaroid material were worn, no glare was apparent. At the same time, objects around the headlight and behind it were brought clearly

'Polaroid' Ends Headlight Glare; Gives Windows One-Way Visio

By Science Service.

BOSTON, Jan. 16.—A new optical material which promises to save thousands of lives now snuffed out in night driving because of headlight glare is announced by the Land Wheelwright Laboratories.

Known as "polaroid," the new material also is to be used in sun glasses, which take away light dazzle without darkening the view. Even more important, it makes possible motion pictures in three dimensions.

Other uses promised include one-

tical use of what formerly has be a laboratory and research phenor enon.

Polarized light is light which v brates only in one direction in co trast to the helter-skelter vibratio in the ordinary light ray. Polarc acts to produce the polarized lig

The best way to think of the co plicated phenomenon is to rega ordinary light vibrations as a ma of straws tossed up in a wind. Th are blown against a picket fen All straws are stopped except tho which parallel the pickets and straws coming through are lined in one direction. Polaroid acts

1937: The Polaroid Corporation is formed

to acquire the assets of Land-Wheelwright's interest in the field of light polarization and to develop this field technically and commercially.

The Polaroid Corporation is organized under the laws of Delaware on September 13, 1937. Kuhn, Loeb & Company and Schroder, Rockefeller & Company agree to finance the new corporation. The company acquires all the patents and patent applications owned by Edwin H. Land and all the outstanding capital stock of eight corporations theretofore formed by Land and his associates for research, manufacturing, patent holding, or other purposes. In exchange, Land and Wheelwright receive the entire issue of 2,500 shares of Class B stock and approximately 60% of the common stock.

Original officers of the corporation include Edwin H. Land, President; George W. Wheelwright, III, Vice President; Richard T. Kriebel, Secretary; Allan Latham, Treasurer.

Original Board of Directors includes Edwin H. Land, Chairman; Donald L. Brown; H.W. Chadbourne; Carlton P. Fuller; W. Averill Harriman; Allan Latham; Sterling Pile; Julius Silver; L.Z. Morris Strauss; James Warburg; and George W. Wheelwright, III.

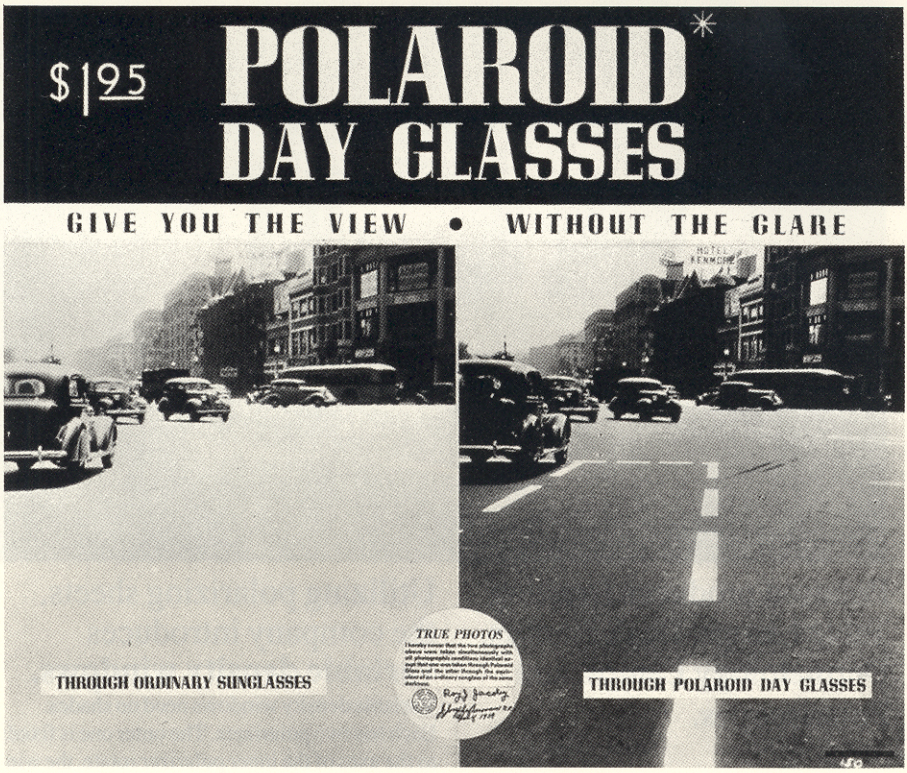
Personnel: Howard G. Rogers joins the company as a Production Assistant, is soon promoted to Research Assistant.

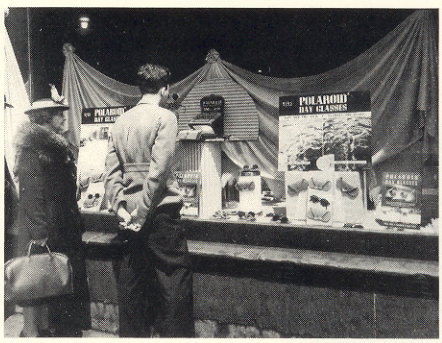
The Executive Committee includes Carlton P. Fuller; Edwin H. Land; Sterling Pile; Julius Silver; and James P. Warburg. H.S.B. Meakin is appointed British Representative.

E. H. Land is recognized for technological acheivements by the Franklin Institute with the Cresson Medal.

Net Sales.....$141,935
Employees.....36

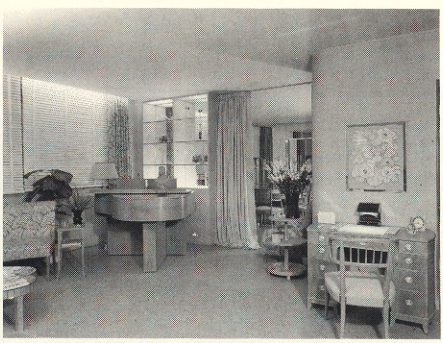
Subsidiaries: The company is expanding, and the subsidiary *Polaroid Lighting* is formed. The capital needed for the expansion comes from private investors in New York and London.





Polaroid **Day Glasses** are introduced.

Other new products are Polaroid microscope attachments and the Type II polarizer.



The Polaroid **Desk Lamp** is developed.

The lamp is designed by Clarence Kennedy, professor of Fine Arts at Smith College and the company's first consultant, and Charles Baratelli. Polaroid Desk Lamps are fitted with a polarizer which removes light which would ordinarily appear as reflected glare. The lamps are produced by Det Hummel of Polaroid Lighting in West Haven. In subsequent years, Greist becomes the contracted manufacturer for Polaroid lamps.

AMERICAN LEAGUERS WIN ALL-STAR GAME, 8 TO 3
Boston Evening Globe
NO TRACE OF LOST PLANE
104,000 MILES OF SEA COVERED
PRETTY TEACHER GETS AID FROM CITIZENS
RECITE MARRIAGE VOWS, TAKE POISON

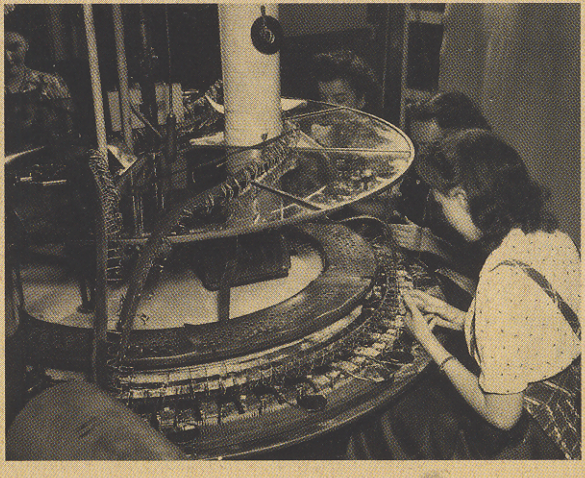
Research continues on automobile headlight applications.

1938

Polaroid produces Drafting Table Lamps, **Desk Lamps**, Dermatology Lamps, and Polariscopes.

Utilizing polarizing sheets, the company introduces **variable density windows.**

Variable density windows need no shades. Each has two polarizers. The outer one is fixed; as the axes of the inner polarizer rotate, the window becomes increasingly dark, until it blocks out all light. The first installation is made on the club car of a Union Pacific streamliner.



Corporation: Articles in *Look*, *Fortune*, and *Life* praising Polaroid generate more favorable publicity than the company's 60 staff members can effectively handle. For a time, Polaroid receives more than 500 letters a day. In October the company is forced to cut higher-bracket salaries by up to 50%, but Polaroid is still spending $10,000 more per month than it takes in.

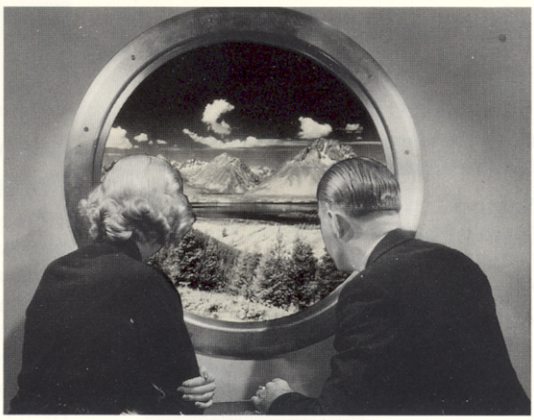
Manufacturing: The company builds **the first automatic laminating equipment** and learns to produce Type II polarizers in volume.

Sales: The company begins to sell lamps directly. Company sales representatives receive $150 per month plus commission. Polaroid sells 25,000 Desk Lamps and 150,000 pairs of sunglass lenses. Day Glasses sell for $1.95.

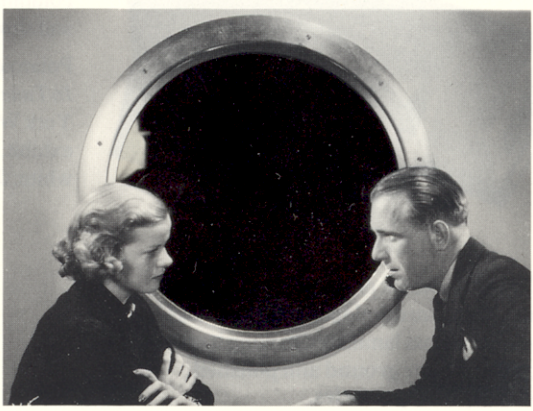
Patents for auto headlight applications are acquired from Polarized Lights, Inc. Polaroid also purchases the patent rights for the polarized headlight system from Frank Short and Lewis Chubb, Jr. (who later becomes manager of Polaroid's Laboratory Services).

When the outside view is too bright . . .

a turn of the control knob of the Polaroid Sight-Conditioning window brings brilliance down to the comfort level . . .



or if you tire of the view another turn cuts it off altogether. Twenty-nine windows like these are installed in the "Copper King" observation lounge car of the Union Pacific streamliner "City of Los Angeles".



Research: Polaroid initiates research on 3-D motion pictures and 3-D amateur photography.

Personnel: Julius Silver is appointed Vice President. Walter Lown is appointed Assistant Treasurer. Walter Town becomes Vice President in charge of Polaroid Lighting and makes the license arrangements for production of the desk lamp.

E.H. Land receives the John Scott Medal and an award by the Philadelphia City Trust.

Net Sales	$195,037
Net Earnings	(72,343)

The Boston Daily Globe EXTRA

GERMANS INVADE AUSTRIA

Bloodless Revolution Speeded by Hitler's Armed Might

1939

A year after its introduction, the Polaroid **Dermascope** is officially endorsed by Helena Rubenstein.

It is an instrument that enables operators to study the subsurface of the skin.

Other products include Polaroid Glasses, Ski Goggles, Flat Lens Day Glasses, Curved-Lens Fit-Ons and Face Forms, Stereoscopic Motion Picture Viewers and a newly developed polarizer for auto headlight application.

Curved lenses for prescription polarized sunglasses are developed using the glass/polarizer/glass laminates, making it possible to manufacture **ground and polished prescription spectacles.**

Walter Dorwin Teague Associates redesigns the **Polaroid Desk Lamp.**

It results in a less bulky, less expensive, and more functional product with an increased illumination area. The designer's challenge was to maintain the position of all edges against the light, the relationship of light source to the desk top, and the positioning of the bulb, reflector and polarizing element. The result is a brushed, cast-metal tubular column integrated with a molded-plastic base and shade.

Polaroid's stereoscopic motion picture, *In Tune with Tomorrow*, is shown at the New York World's Fair as part of the Chrysler exhibit. The first year's film is in black and white; the second year's is in color.

Sales: Sunglasses and sunglass lenses represent the company's first substantial commercial market, and more than a million pairs of Polaroid glasses are sold to the public in 1939. However, Polaroid stops manufacturing complete sunglasses and manufactures only laminated lenses for sale to licensees. More than a million and a half stereoscopic movie viewers are sold for use at the Chrysler exhibit.

Facilities: The company's expansion requires another move. Due to the scientific nature of the company, it is decided that Cambridge is the most suitable area. **730 Main Street** is leased, and Polaroid moves across the river from Boston to Cambridge.

Aviation, fog-free, and dark-adaptor goggles are among the specialized applications produced for the Army and the Navy.

Research: Polaroid is awarded a $7 million contract to develop thermal-guided (heat-seeking) missiles equipped with miniature computers.

Personnel: William J. McCune, Jr., joins Polaroid to establish the quality control operation of the company.

Boston Evening Globe

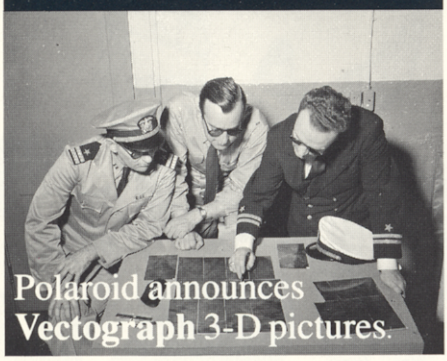
RED STREAK FINAL

WAR BEGINS

Poland Invaded; Cities Bombed

Ultimatums by French, British

1940



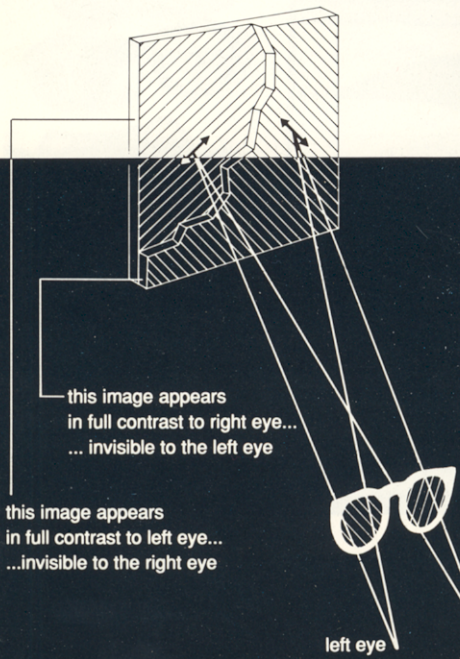
Polaroid announces Vectograph 3-D pictures.

The Vectograph represents the fusion of the company's original technology, the polarizer, with photography. Among other applications, Vectographs will be used for aerial reconnaissance surveys during World War II.

The classic ideal of 3-D photography is achieved.

Two pictures are in the same place at the same time, one for each eye, for the brain to fuse into a single three-dimensional impression.

Other products include optical goods, lighting equipment, 3-D Picture Viewer, Polarized Sheeting, **Variable Density Day Glasses**, Study Lamp, 3-D motion pictures and polarizers.


this image appears
in full contrast to right eye...
... invisible to the left eye
this image appears
in full contrast to left eye...
...invisible to the right eye
left eye
right eye

Research: The Vectograph film has an image on each of its two sides. The images are polarized in different directions, at 90-degree angles to each other: one 45 degrees to the left of vertical, the other 45 degrees to the right of vertical. **Polaroid viewing spectacles** have their polarizing lenses similarly arranged, with the axis of one lens at right angles to that of the other. Through the viewers, the left eye sees the image on one surface of the Vectograph film, the right eye sees the other. Only one image is visible to each eye.

Corporation: Polaroid securities are registered under the Federal Securities Act.

Facilities: With the move to 730 Main Street complete, Polaroid now has work space for 240 employees.

Personnel: W.A. Harriman resigns as Director.

E.H. Land is honored by the National Association of Manufacturers as a National Modern Pioneer for having contributed to society one of the most important inventions in 25 years. He is the youngest of the 29 recipients.

World Events

Winston Churchill becomes Britain's prime minister.

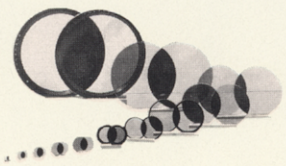
President Roosevelt is re-elected to a 3rd term.

The Lascaux Caves are discovered in France.

1941 Polaroid creates a machine gun trainer.

The ability to produce stereoscopic motion pictures is adapted for the three-dimensional sound movies and optical bullets. A Polaroid brochure explains: *The training device is the only one which enables gunners to follow the path of the machine gun tracer bullets which they shoot at these planes. A scoring device records all hits precisely. The Polaroid machine gun trainer turns out seasoned gunners and saves our armed forces millions of dollars worth of ammunition.*

With the US entry in World War II, automobile manufacturing is stopped and Polaroid's auto headlight program suspended.



Polarizing and nonpolarizing filters are made for various Navy instruments. They are produced in many colors and a variety of shapes and sizes.

OSBORN ST., CAMBRIDGE – 127,000

Corporation: Production and organization are adjusted to **the new location**. Anticipating America's entrance into World War II, Polaroid enters into a research subcontract with the National Defense Research Committee and continues research and development on defense projects.

Manufacturing: Production of the Polaroid Desk Lamp is licensed to a manufacturer, as Polaroid focuses its energies on defense projects and expands its personnel to meet the demands of the war effort.

Sales exceed $1 million for the first time.

Honors: For support of US wartime activities, Polaroid receives the Bureau of Ordnance and Navy "E" pennant.

Personnel: George Wheelwright, III, resigns as Vice President but remains as Director. Carlton Fuller becomes Executive Vice President and remains as Director. Walter Lown is elected to the Board of Directors.

Net Sales	$1,032,425
Net Income	126,286

The Boston Daily Globe EXTRA

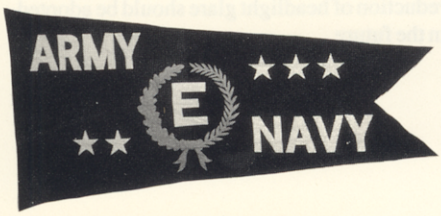
JAPAN STRIKES ALL OVER PACIFIC

Bombs Hawaii, Guam, Philippines Takes Heavy Toll – Sea Battle On F. D. Will Address Congress Today

THE OLD AXIS STRATEGY . . . By Baker

1942

Polaroid **all-purpose goggles** worn by General George S. Patton.



Most of Polaroid's products are for the war effort.

Day glasses for civilian use are no longer produced, due to a restriction on the necessary raw materials. With the invasion of Guadalcanal, aerial Vectographs are used extensively for military reconnaissance. Negotiations for the postwar use of Polaroid headlight glare-reduction equipment continue, despite the preoccupation of the negotiators with urgent military demands.

Honors: Polaroid receives two six month service stars and the Army-Navy **"E" pennant.**

Research is underway for an electric-eye accessory that provides correct exposure in any outdoor light.

Corporate Culture: Continuing E.H. Land's innovative industrial policies, Polaroid establishes the employee appeal procedure.

Facilities: The Navy asks the company to set up a Glass Optics Department, for which 12 Ames Street is rented. By the fall, both the Ames and Main Street buildings are overcrowded. Thus 211 Massachusetts Avenue is rented, bringing the total floor space to over 135,000 square feet.

Personnel: Frank J. Lord is appointed Assistant Treasurer.

Net Sales.....$4,119,120
Net Earnings.....147,831

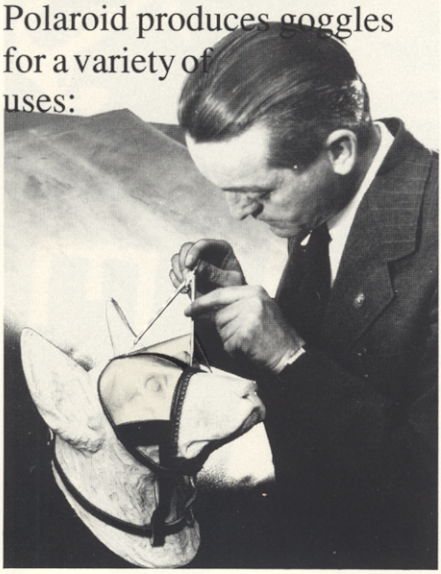
The Boston Sunday Globe EXTRA

400 DEAD IN HUB NIGHT CLUB FIRE

Hundreds Hurt in Panic as the Cocoanut Grove Becomes Wild Inferno

1943

Polaroid produces goggles for a variety of uses:



Variable Density Goggles, for aircraft and anti-aircraft gunners to use in reducing glare from the sky and sun; Dark-Adaptor Goggles, which permit those needing good night vision to remain dark-adapted while temporarily working in lighted areas; Aviation Goggles for Army and Navy flying personnel; Fog-Free Goggles, for eye protection under conditions which cause lens fog in ordinary goggles; polarizing filters and non-polarizing colored filters for use in gunsights, rangefinders, periscopes, binoculars, and other military instruments;

Vectograph materials and field processing equipment for making three-dimensional aerial views of terrain; precision plastic optical parts for telescopes, fire control, signaling devices and other instruments;

position angle finders ,for finding the elevation of aircraft above the horizon and anti-aircraft machine gun trainers, for teaching gunners how to use tracer bullet observation in the control of anti-aircraft gunfire. Other products include All Purpose Goggles, Gunsight Optical Filters, anti-tank gunsights, gunnery practice training devices and blind-flying training equipment.

An understanding, not formalized before the year's end, is reached with the Automobile Manufacturers Association as to the basis on which its designees might procure polarizing material in case the Polaroid system for the reduction of headlight glare should be adopted in the future.

Optics : Ring sights for antiaircraft guns and bazookas are constructed with two circular polarizers and a basal section of uniaxial crystal in between. Having no optics, the ring sight allows the gunner to shift position relative to the weapon, without the target—lined up in a set of concentric circles—shifting position relative to the eye.

Corporation: Polaroid now has three branches: Research, Engineering, and Production.

Members of the Polaroid band.

Honors: The company is among the few which have had four six-month service stars added to the Army-Navy "E" pennant.

E.H. Land is appointed a Fellow of the American Academy of Arts and Sciences.

Net Sales.....$10,739,225
Net Earnings.....202,152
Employees.....1,000

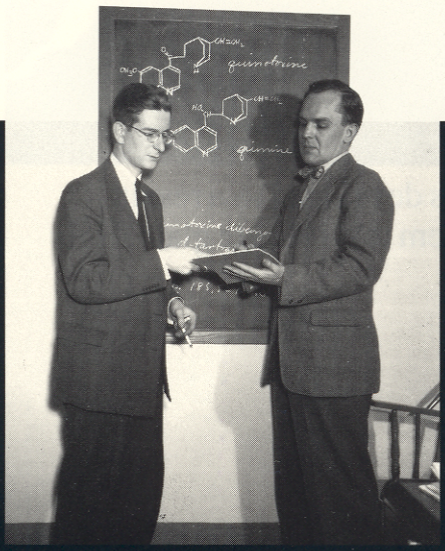
1944

Land conceives of the one-step photographic system.

While on vacation in Santa Fe, New Mexico, his young daughter asks why she has to wait to see the picture he has just taken of her. During a solitary walk around Santa Fe, he undertakes the task of solving the problem his daughter has introduced. Within an hour he has visualized most of the requirements for the camera, the film, and the physical chemistry. Only after three years of intensive work will Land and a group of Polaroid scientists and engineers produce the complete photographic system. Years of experience working with polarizing films and plastics have prepared them to enter this new field of photography.

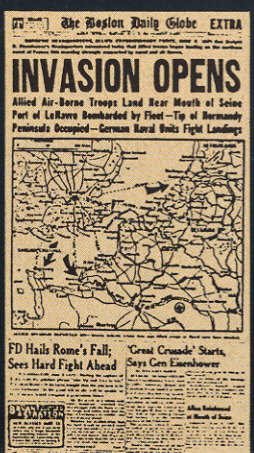
Land writes: *It was as if all that we had done in learning to make polarizers, the knowledge of plastics and the properties of viscous liquids, the preparation of microscopic crystals smaller than the wavelength of light, the laminating of plastic sheets, living in the world of colloids in supersaturated solutions, had been a school and a preparation both for the first day in which I suddenly knew how to make a one-step dry photographic process and for the following three years in which we made the very vivid dream into a solid reality.*

New devices utilizing variable density light-polarizing filters are adapted to sextants, binoculars, sights, and other visual instruments. The company and the Automobile Manufacturers Association sign an agreement covering the basis for licensing manufacturers, in the event the Polaroid system for eliminating headlight glare is adopted.



Research: Quinine, one of the components of herapathite, falls into scarce supply, with hospitals receiving first priority. **Dr. Robert B. Woodward and Dr. William E. Doering discover a way to manufacture synthetic quinine.** However, a polarizer to replace the original sheet is invented which bypasses the need for either natural or synthetic quinine. In this process, a polarizing dye or stain replaces the layer of herapathite crystals.

Land conceives of a hand-held, easy-to-operate camera that would produce dry (or apparently dry), continuous-tone images instantly under a variety of temperature conditions. No longer would it be necessary for an exposed negative to be developed, fixed, washed, and dried, and then the positive to be exposed, developed, fixed, washed, and dried. Instead, a single complex chemical process—a self-activated, self-regulated complex chemical process—would take place among the compounds residing in three parts of a *film sandwich*: the positive receiving sheet, the negative sheet, and a viscous reagent spread in a thin layer between the two.


The Boston Daily Globe EXTRA

INVASION OPENS

Allied Air-Borne Troops Land Near Mouth of Seine
Port of LeHavre Bombarded by Fleet—Tip of Normandy Peninsula Occupied—German Naval Units Fight Landings

FD Hails Rome's Fall; Sees Hard Fight Ahead

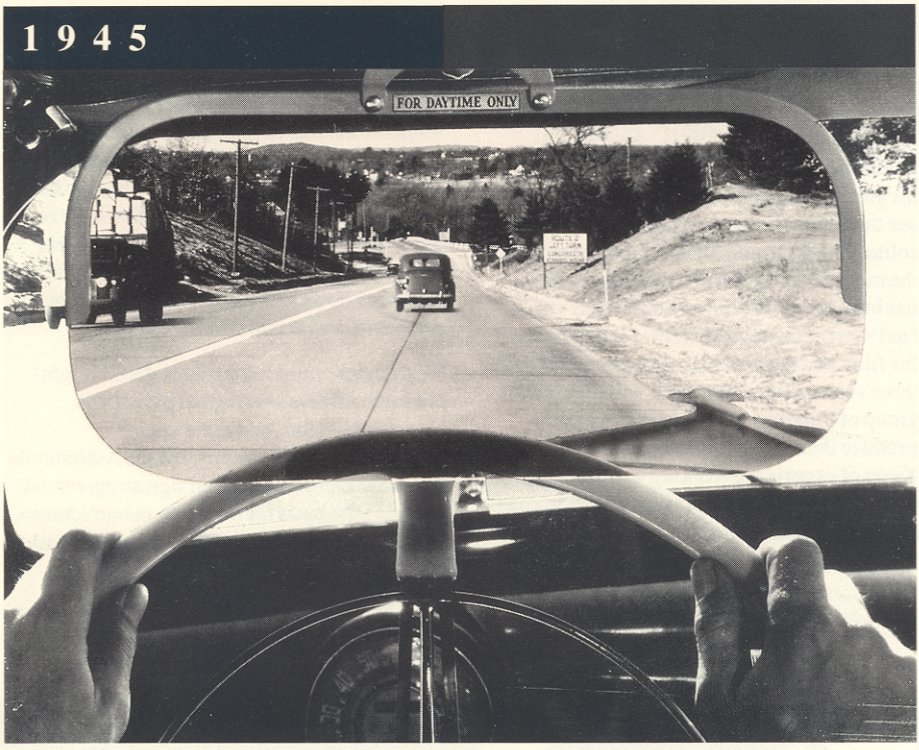
'Great Crusade' Starts, Says Gen Eisenhower

Personnel: Meroe Morse is hired as E.H. Land's lab assistant. Morse later becomes the manager of the black and white research labs and the first person at Polaroid to create a historical collection of the company's products.

First patent for instant photography is filed by Polaroid.

Net Sales	$13,262,329
Net Earnings	473,284
Employees	1,250

1945



A polarized **Day Driving visor** is developed as a result of research into a polarizing system to eliminate glare from oncoming headlights.

Corporation: A major recapitalization of the corporation is carried out. With the end of the war effort, which has expanded the company to 16 times its prewar base, Polaroid begins the conversion back to civilian product research and production. Although Polaroid must reduce its employee population from a peak of 1,250 to 900, 176 veterans are re-hired.

Corporate Culture: The standard 40-hour week is resumed in all departments except Research. The company also introduces a 10% increase in base pay for hourly employees.

Honors: Polaroid receives a congratulatory message from the Army and the Navy for being one of the first to be awarded a fifth renewal of the Army-Navy "E" award.

Personnel: Robert Brown is named a Director. Donald Brown is appointed Vice President and Patent Counsel and remains Director.

E. H. Land is awarded the Rumford Medal by the American Academy of Arts and Sciences.

Net Sales	$16,752,465
Net Earnings	449,424
Employees	900

The Boston Daily Globe

ROOSEVELT DIES
TRUMAN SWORN IN

ONLY HALF OVER–Truman

"Our Rejoicing Subdued by Terrible Price We Have Paid to Rid World of Hitler"

Advises Japanese to Surrender

Watchword for Coming Months: Work, Work, Work

ATOMIC BOMB BLASTS JAPAN

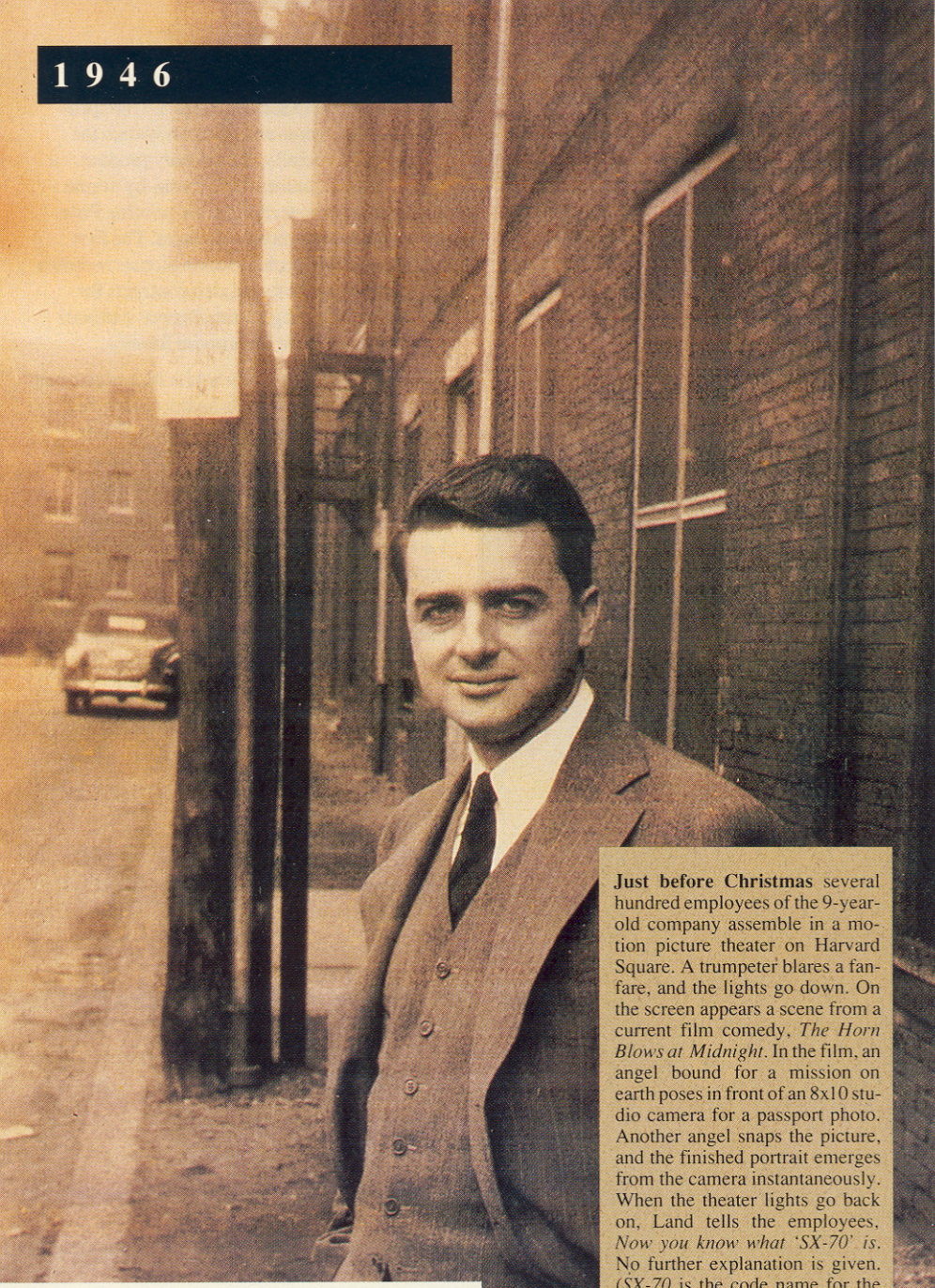
Yanks Loose Most Destructive Force in History

SECRET WEAPON USED FOR FIRST TIME SUNDAY

Globe **OFFICIAL**

President Truman Announces

1946



Edwin H. Land outside his laboratory in Cambridge. This photograph was taken on experimental film he was then making **in the laboratory.**

Research continues on one-step photography; a new method of color motion picture processing (called Polacolor), and Vectography. The Office of Naval Research and the American Cancer Society fund research on a color-translating, ultraviolet microscope.

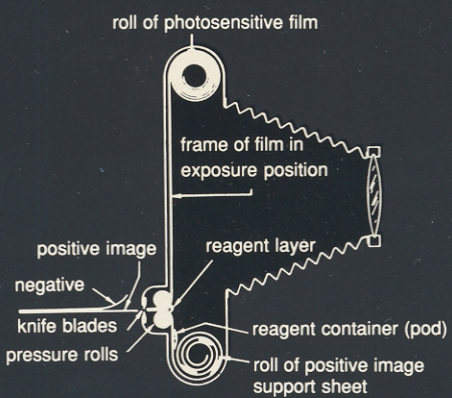
Just before Christmas several hundred employees of the 9-year-old company assemble in a motion picture theater on Harvard Square. A trumpeter blares a fanfare, and the lights go down. On the screen appears a scene from a current film comedy, *The Horn Blows at Midnight*. In the film, an angel bound for a mission on earth poses in front of an 8x10 studio camera for a passport photo. Another angel snaps the picture, and the finished portrait emerges from the camera instantaneously. When the theater lights go back on, Land tells the employees, *Now you know what 'SX-70' is.* No further explanation is given. (*SX-70* is the code name for the Land one-step developing process.) Employees will wait in suspense from December 1946 to February 1947 for further details.

Corporate Culture: The company works on a new profit-sharing plan.

Honors: Polaroid receives the Navy Ordnance Award *for distinguished service to the research and development of naval ordnance*, especially for contributions to the development of guided missiles and other significant devices.

1947

Land astonishes the audience of the Optical Society of America with the announcement of the one-step process for producing finished photographs within one minute.



Design of the first Land camera is completed, and the decision is made to manufacture the cameras with outside contractors. Until production of cameras and film can sustain the company financially, the primary product is a new process: a painstaking frame-by-frame color-separation technique for printing Polacolor three-color motion pictures. The first commercial Polacolor motion picture is shown at a trade show. Polaroid also contracts for processes including 35mm *Popeye* cartoons and sing-alongs for Paramount Studios.

A committee of the Automobile Manufacturers Association recommends against using the Polaroid system for the elimination of auto headlight glare because of the difficulties in converting the 33 million cars on the road.

Mention is also made of application of the Land process to document duplication and the rapid processing of X-rays.

An important component of the new process is the pod, a sealed package of viscous chemicals, which is the basic element of all instant film.

The Pod: The Polaroid Land instant photographic processing system incorporates the processing reagent in a flat, hermetically sealed pod attached to the negative sheet. The pod is designed to burst along its leading edge as the positive and negative sheets, with pod affixed, pass through a pair of pressure rollers. The reagent is spread evenly over the inner surfaces of the facing layers, rapidly becoming absorbed and initiating the development and transfer processes. Since the amount of liquid used is just enough to be absorbed within these layers, the outer surface of each of the sheets remains dry.

Chemistry: The high viscosity of the reagent allows it to be spread in a very thin, even layer (0.005 inch or less). This provides processing uniformity and also holds the positive and negative layers together during processing.

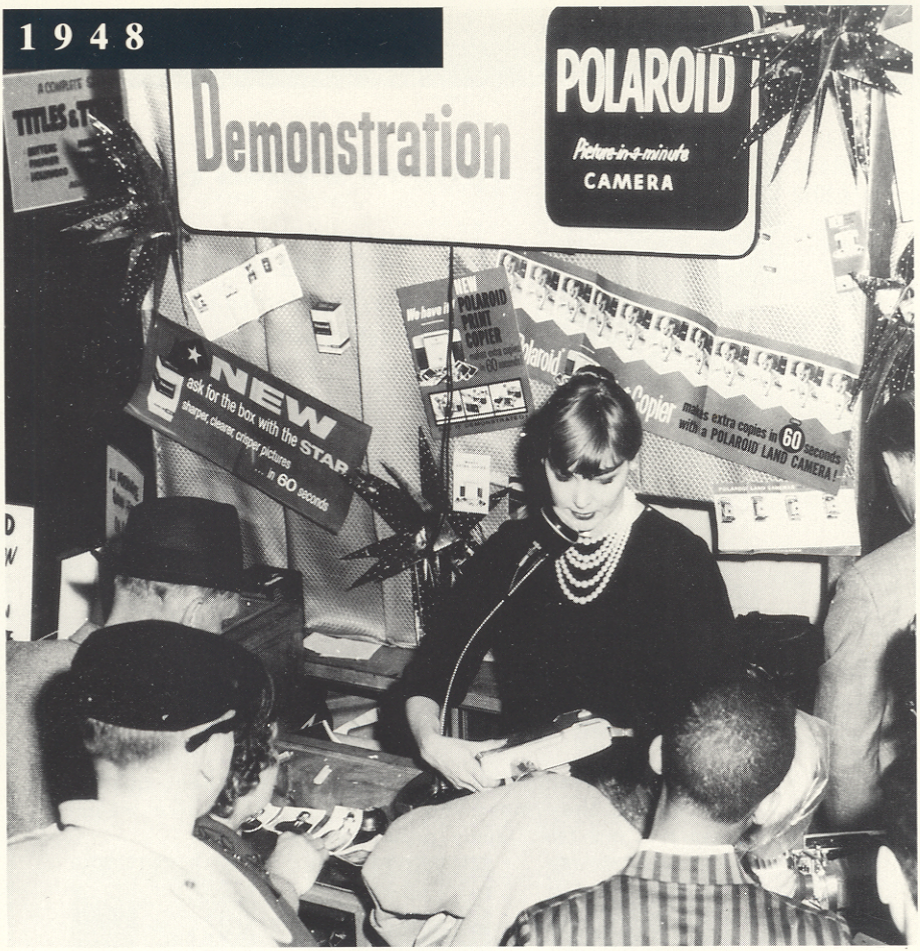
Research continues into the Polacolor process for printing conventional three-color motion picture film.

Honors: The Science Service lists the dry, one-step Land process of photography as one of the 10 most outstanding events of the year.

Dr. Land is named honorary Doctor of Science at Tufts University. He also receives the Army-Navy Certificate of Appreciation.

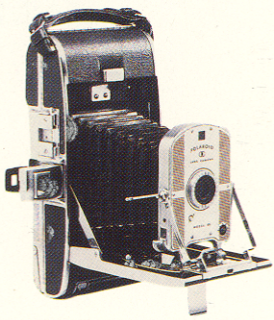
Manufacturing: Polacolor motion picture film is produced at a pilot plant with a capacity of several million feet per year.

1948

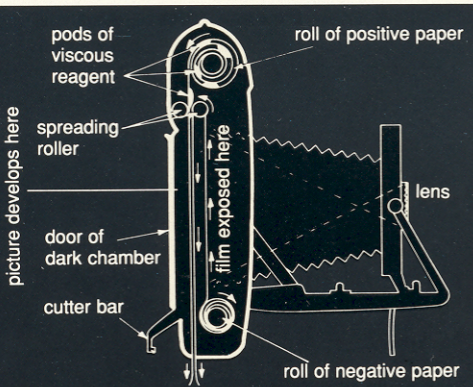


The first Land camera, the **Model 95**, is sold in Boston at Jordan Marsh department store on November 26 for $89.50.

The new camera accomplishes all the necessary processing operations. The picture comes out of the camera dry and requires no further processing. It features a three-element 135 mm f/11 lens and shutter speeds from $\frac{1}{8}$ to $\frac{1}{60}$ of a second.



Optics: The Model 95 has a folding optical viewfinder with aiming post and shutter housing. This model is the prototype for all Polaroid Land camera models produced during the next 15 years.



Corporation: Four US patents containing 89 claims have already been issued on the Polaroid Land camera, and a considerable number of additional claims have been allowed in many pending applications.

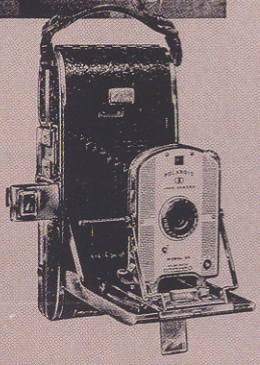
NOVEMBER 26, 1948

THE BOSTON DAILY GLOBE BOSTON POST THE BOSTON HERALD

POLAROID CAMERA ON SALE HERE

Develops Film and Prints Photo in Minute

DR. EDWIN H. LAND



JORDAN MARSH COMPANY

NEW ENGLAND'S LARGEST STORE

First in the world with an exciting new Polaroid section, **Jordan's announces** one of the **greatest advances** in photography! **Ready now . . .** for the whole family to enjoy!

Imagine! FINISHED PICTURES in ONE MINUTE . . . with this New

POLAROID *Land* CAMERA

Gives permanent, brilliant, pictures of excellent quality, the minute they mean the most . . . it works like magic! snap it . . pull tab . . enjoy pictures in one minute!

Snap the picture. A single setting adjusts both lens and shutter speed. No calculations, no memory work. Carefree picture taking! The camera is a precision instrument, guaranteed for years of service.

Pull a tab. You press a button, pull a paper tab—and your picture starts to print itself outside the camera. Three seconds later, there is your picture, ready for all to enjoy.

See the finished Picture—notice it seems the most. The paper is dry . . . the picture completely . . . yours to keep. Black border. Land process gives pictures sharp to last performance of conventional snapshots.

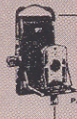
Months ago newspapers across the country hailed this invention as front-page news! Jordan Marsh Company is the first Department Store in the world to demonstrate and sell it!

You'll be amazed by the magic-like performance whether you are professional, amateur, or one who has never taken a picture. It works smoothly and simply. It allows you to take those once in a lifetime vacation shots and see them on the spot. You can mail them to friends immediately, while they're still news! You can treasure them for years to come.

Imagine the thrill of showing the children their pictures right at the birthday party at which you take them. Watch your party spring to life when your guests see their pictures while all can enjoy them.

Never again need you wonder "how will those pictures come out?" You'll see each picture as you take it. Reshoot the scenes if you like. Get new poses. There is photographic perfection at your fingertips.

Step into our Camera Section in its new location on the street floor of the Hovey Building . . . see the SPECIAL DEMONSTRATION of the Polaroid Land Camera in action!



This amazing Camera on Sale Now at Jordan's, only

89.75 Tax included

PAY ONLY $17.95 DOWN
If you wish, balance small monthly payments

Film 1.75 per roll of eight pictures! (These pictures cost no more than ordinary film print and developing!)

★ *See this sensational camera demonstrated at Jordan Marsh . . . Camera Section—Street Floor—Hovey Building*

SPECIALLY TRAINED EXPERTS ARE HERE TO SERVE YOU—EXTRA SELLING SPACE—CONTINUOUS DEMONSTRATION

Chemistry: Type 40 film exploits the difference between exposed and unexposed silver halide grains. Silver halide left unexposed when the negative is exposed

Personnel: J. Harold Booth (formerly Vice President of Bell and Howell) joins Polaroid as Executive Vice President and General Manager and is elected a Director. George Wheelwright, III, resigns as Director.

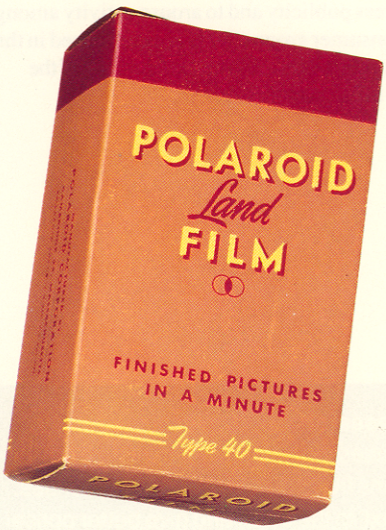
Corporation: Because no printable negative is created, a copying service is made available to Polaroid customers to provide duplicate pictures.

Dr. Land receives the Holley Medal from the American Society of Mechanical Engineers.

Polaroid Land film **Type 40** for the Model 95 camera makes sepia-toned photographs in 60 seconds.

Type 40 Land film is 100 ASA, orthochromatic, with a 60-second development time. The 8-exposure rolls are processed inside the camera or camera back because they cannot be exposed to light while being processed. The $3\frac{1}{4} \times 4\frac{1}{4}$-inch deckle-edged prints require no futher processing or treatment after removal from the camera.

Polarizing lenses continue to be a major part of the product line. Abrasion-resistant, hard-surfaced plastic sunglass lenses are developed.



to light is not chemically converted, or *reduced*, to a metallic silver positive image. The sepia tone is attributable to the relatively sparse distribution of silver content through a thick image-receiving layer. Stabilizing compounds incorporated in the receiving sheet diffuse into the image layer toward the end of processing, neutralizing the activity of the residual reagent and creating a protective surface layer. As a result, Type 40 photographs are longlasting.

Research: Intensive research is begun on the process of transferring positive dye images.

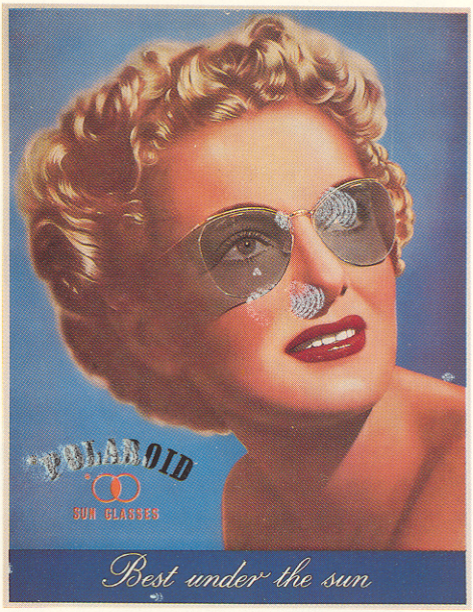
Net Sales	$2,481,372
Net Earnings	(865,255)

1949

The Polaroid Land camera Model 95 is received with great enthusiasm, and photographic sales for the first year exceed $5 million.

Of his concept of one-step photography, Dr. Land says: *The camera should be as small and as light as is consistent with the picture size chosen. The process must be concealed from—nonexistent for—the photographer who, by definition, need think of the art in taking and not in making photographs.... In short, all that should be necessary to get a good picture is to take a good picture, and our task is to make that possible.*

The Polaroid system for eliminating glare from night driving continues to receive favorable press publicity and to arouse activity among consumer groups. Bills are introduced in three state legislatures to make adoption of the system compulsory.

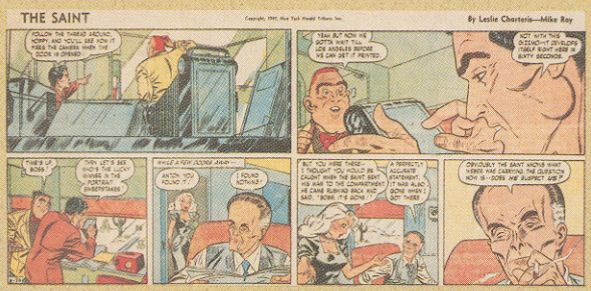


Six-diopter curved plastic **lenses for sunglasses** are developed.

The company introduces a polarizing filter for television screens which reduces glare and sharpens contrast. New applications for Land's instant photographic process include identification photographs, microscopic work and oscillographic uses.

Research: Six-diopter curved plastic lenses for sunglasses minimize reflections from the back sides of the lenses, next to the eyes, and give better optical properties via a more uniform surface.

Work continues on Polacolor movies, the development of black and white film, and a copying device for the consumer market.



Reprinted courtesy of the Pittsburgh Post Gazette

Corporation: No federal income taxes are due on 1949 earnings, because of credits carried forward.

Corporate Culture: A system of internal job-posting begins which is recognized as a model for industry. The Employees Committee is established with E. Stokes as chairman.

Sales: Photographic sales account for 80% of total sales.

Personnel: Frank Lord is named Assistant Secretary as well as Assistant Treasurer. H.W. Chadbourne resigns as Director.

Land hires **Ansel Adams** as a consultant.

During what will become a long association with the Corporation, Adams works diligently and carefully, reporting even minute visual problems and mistakes to Polaroid scientists and technicians. The sepia-tone photograph of Adams above was taken by Clarence Kennedy, circa 1963.

Polaroid will also consult artists like Paul Caponigro and William Clift during the late 1950's. Polaroid now owns one of the largest collections of early Caponigro works.

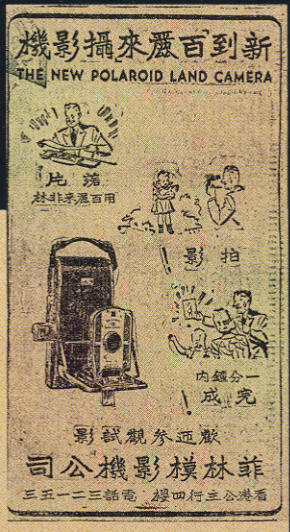
Almost from the beginning, Polaroid Corporation supports the photographic arts.

Besides regularly purchasing original works, the company encourages and collaborates with many artists--professionals and amateurs alike--by supplying them with Polaroid photographic materials and direct grants. Many independent centers within the company, from film manufacturing and instructional publica tions to advertising, marketing, and administration, have a history of enlisting the technical and artistic expertise of photographers. The atmosphere of ongoing support can best be described as *controlled anarchy*. Land understands that artists will provide useful observations about Polaroid's products, different from those of the company's technical staff. The photographers' assignment isoften to take the newest batch of film and photograph anything they want and, in return, to report any technical advantages or problems they find.

Color translating, ultra-violet microscopy is further developed for primary applications in cancer research.

Honors: Polaroid Corporation wins the US Camera Achievement Award for the picture-in-a-minute process and the Land Camera.

The Physical Society of Great Britain honors Dr. Land with the Duddel Medal. He also receives a US Camera Achievement Award from US Camera and Travel. Dr. Land is elected to the Visiting Committee, Department of Physics, Harvard University (1949-1966).



Reprinted courtesy of Wah Kiu Yat Po

Polaroid Reports Sales Of Its Land Cameras Still Show Upward Trend

FROM THE WALL STREET JOURNAL Staff Reporter

BOSTON—Sales of Polaroid Land cameras still show an upward trend, said J. Harold Booth, vice president of Polaroid Corp.

Production of the cameras, which deliver a finished picture in a minute, is just about keeping pace with demand. Film sales are still restricted to six rolls a month to holders of reservation books, included with each camera sold. However, film production has increased to the point where some exceptions, notably in the case of picture taking at charity affairs, can be made to the six-roll-a-month restriction.

Polaroid now has national distribution of the camera, with about 2,500 dealers from coast to coast. National advertising started June 13 with a full page in a national magazine, and will be gradually expanded to include several general and photographic publications with national distribution.

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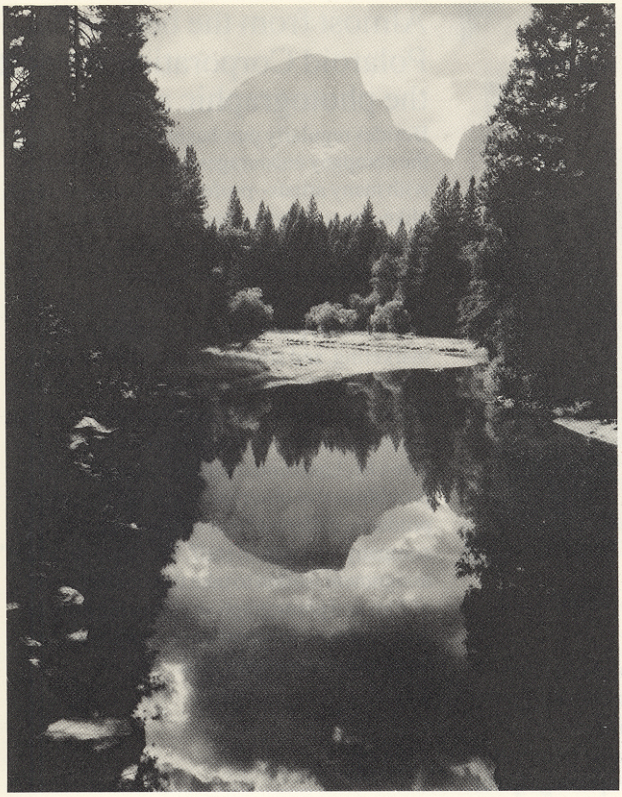
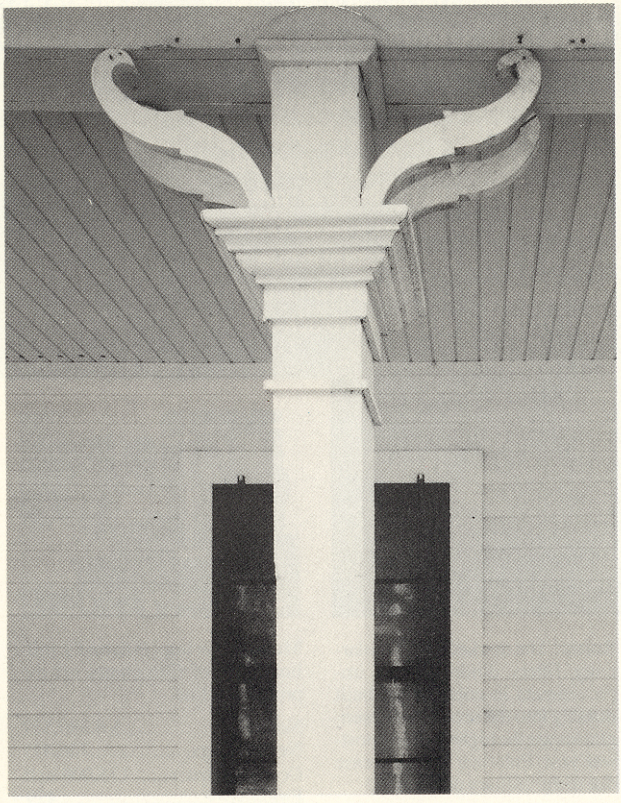


Ansel Adams
Half Dome, Reflections, Merced River, Yosemite, 1960
Polaroid P/N 4x5 Land
Film Type 55
Polaroid Corporate Archives

Ansel Adams
Logs, Rocks, Frost, Yosemite Valley, California, 1959
Polaroid PolaPan 4x5 Land
Film Type 52
Polaroid Corporate Archives

Ansel Adams
Untitled, 1977
Polaroid PolaPan 4x5 Land
Film Type 52
Polaroid Corporate Archives

Ansel Adams
Untitled, 1971
Polaroid PolaPan 4x5 Land
Film Type 52
Polaroid Corporate Archives



1950

By 1950 more than 4,000 dealers throughout the US sell Polaroid cameras, film and accessories.

Specially adapted versions of the Model 95 camera are produced for identification work, and three companies announce adaptations of the camera for the recording of oscillograph traces.

The Polaroid headlight system is endorsed by the National Junior Chamber of Commerce and the New England Conference of American Automobile Association Clubs.

The Boston Mass Transit Authority (MTA) equips 88 cars with polarizing headlights and visors.

Improvements in film result in the Polaroid black and white film **Type 41.**

The new film triggers an increased demand for cameras. However, when Polaroid selects a new contractor to manufacture cameras, production delays result in unfilled orders.

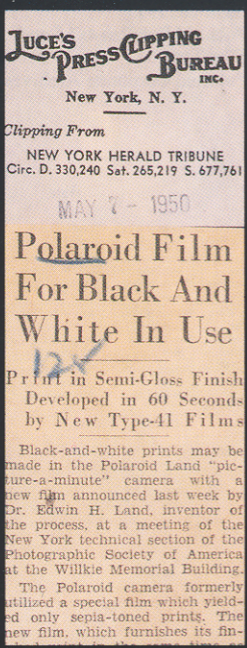
A contract from the Signal Corps results in the Tell-tale, a film badge which records radiation over a period of time. The resulting radiation record is developed in 60 seconds.

Chemistry: Type 41 film uses much thinner silica-based receiving layers coated over waterproof polymers. The compact images deposited within these silica layers are formed of aggregated particles of silver, and the deposit of aggregates is more of a continuum than the particles of the sepia image deposits. This type of silver deposit produces images both neutral in color and constant in hue. Silica-based systems of this type continue to be used in most of the current black and white systems. New technical products are added to the optical line, including polarizing filters, which extend polarization control beyond the range of the visible spectrum into the infrared, and various types of nonpolarizing filters for the infrared.

Sales: The market for TV polarizing filters diminishes as improvements in contrast are built directly into the sets. Sales of sunglasses are the highest of any postwar year. Polarizer sales increase due to the military demand.

Manufacturing: Polaroid's millionth roll of film comes off the production line.

Net Sales	$ 6,389,521
Net Earnings	726,471
Occupied Space	115,000 sq ft
Employees	429



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MAY 7 - 1950

Polaroid Film For Black And White In Use

Print in Semi-Gloss Finish Developed in 60 Seconds by New Type-41 Films

Black-and-white prints may be made in the Polaroid Land "picture-a-minute" camera with a new film announced last week by Dr. Edwin H. Land, inventor of the process, at a meeting of the New York technical section of the Photographic Society of America at the Willkie Memorial Building.

The Polaroid camera formerly utilized a special film which yielded only sepia-toned prints. The new film, which furnishes its fin-

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1951

Polarizing lenses are produced for sunglasses and military goggles.

Polarizing filters are produced for Range-Finders, Drift Sights, Submarine Periscopes, Torpedo Sights, Sextants, 3-D pictures, and the Ultraviolet Color-Translating Microscope. A radiation detector (glass-type, with electronic reader) developed and produced by Polaroid performs satisfactorily in the A-bomb test fields. Infrared and panchromatic films are available in limited quantity for aerial products. The first completed Ultraviolet Color-Translating Microscope is put into service on biological studies.

In Korea the Model 95 Land camera is widely used by army chaplains to photograph hospitalized soldiers, who receive their pictures on the spot and send them home to their families.

A print coater is added to black and white film.

The print coater is a simple treatment for long-term image stability. The chemical components of the coater liquid neutralize any alkalinity and remove any residual processing reagent left on the sheet. The coater solution then dries to a hard coating that protects the print from atmospheric contaminants.

Type 1001 Land film for radiography is introduced and becomes the first in a continuing series of Polaroid instant X-ray products. Type 1001 produces a 10x12-inch X-ray print in 60 seconds.

The Land Roll Film Back adapts professional cameras and various types of industrial and scientific instruments for use with Polaroid roll films.

Chemistry: Land redesigns Type 41 film with a waterproof layer that confines the image layer to a thickness of only .4 microns. To protect this delicate layer, Land and his associates devise a polymer coating fluid which removes residual reagent and then dries to a tough protective surface. The coating solution, soaked on- to cigarette-sized applicators of porous material, still remains a part of Polaroid's black and white film system, although in 1968 coaterless black and white film will be marketed.

Research continues on **X-ray** and infrared systems. The X-ray application of the Land process is successfully demonstrated at the American Medical Association's annual convention. The more expensive Pathfinder Model 110 camera, with high-speed lens and a coupled range-finder, is being developed. Other products include an ID Adaptor Kit for industrial or commercial use and the Polaroid Copy-maker for making copies of letters, photos, albums, and photomounts.

Sales: Photographic products account for close to 80% of the company's total income.

Personnel: David Skinner is elected Vice President of Manufacturing and a Director. William McCune is named General Engineering Manager. Skinner, McCune and Donald L. Brown, Patent Counsel, are appointed to the Operating Policy Committee.

Facilities: Eleven acres is purchased in Waltham.

Dr. Land is named president of the American Academy of Arts and Sciences (1951-1953).

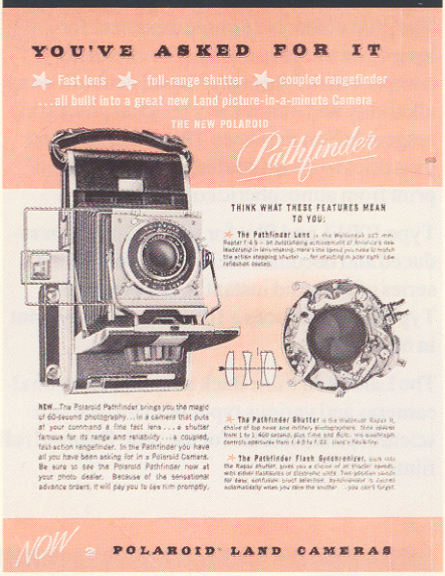
The Boston Daily Globe

Truman Tells Nation the Choice:

M'ARTHUR OR PEACE

'Impeach Truman,' GOP Senator Demands

1952


YOU'VE ASKED FOR IT
Fast lens
full-range shutter
coupled rangefinder
...all built into a great new Land picture-in-a-minute Camera
THE NEW POLAROID
Pathfinder
THINK WHAT THESE FEATURES MEAN TO YOU.
NOW... The Polaroid Pathfinder brings you the magic of 60-second photography... in a camera that puts at your command a fine fast lens... a shutter famous for its range and reliability... a coupled, fast-action rangefinder. In the Pathfinder you have all you have been asking for in a Polaroid Camera. Be sure to see the Polaroid Pathfinder now at your photo dealer. Because of the sensational advance orders, it will pay you to see him promptly.
NOW POLAROID LAND CAMERAS

Polaroid introduces the Model 110 Land camera, called the **Pathfinder**.

This camera is designed for professional use and is equipped with an f/4.5 lens and provides shutter speeds to $\frac{1}{400}$ of a second.

Television advertising of the photographic products begins with the Dave Garroway show. Television promotion includes weekly spot telecasts in 24 cities and live network demonstrations.

Polaroid acts as consultant to Hollywood on **3-D movies.**

The first 3-D stereoscopic movie *Bwana Devil* is premiered. The audience views the film through Polaroid expendable 3-D glasses. The apparent dimensionality of the film is made possible through the use of polarizing filters on the projectors.

J. R. Eyerman

LIFE Magazine © 1952, 1980 Time Inc.

Optics: A stereoscopic picture is one that reproduces the scene with apparent depth. In **stereoscopic movies** the pictures are taken on two separate films—one for each eye—by means of a double camera with lenses about three inches apart. The films are projected synchronously through dual lenses, one of which polarizes vertically for the left eye, the other horizontally for the right eye. Without special glasses, the picture on the screen is illegible, but with polarizing lenses each eye sees the picture that is meant for it (each lens bars out the image intended for the other eye), and the optical nerve center receives the impression obtained when the eyes are focused on a solid object.

Polaroid scientists and stereoscopic photographers use the **Interocular Calculator** to correlate some of the geometrical factors involved in stereoscopic photography. They produce stereo-grams having maximum three-dimensional effect within the limits of comfortable viewing.

Research continues on the Vectograph, a single film strip bearing two images—one image on the front side of the film and the second image on the back side.

The use of the Polaroid Vectograph will eventually eliminate the need for double projection cameras and the accompanying synchronization problems that occur at 3-D film exhibitions.

Corporation: The first dividends are issued on common stock.

Corporate Culture: The Board of Directors institutes additional employee benefits, including group insurance, an expanded Christmas bonus, a profit-sharing retirement fund, and an executive incentive compensation plan.

Facilities: Polaroid leases additional space in Cambridge.

Sales of cameras, picture rolls, and accessories account for 81% of total volume.

Dr. Land receives an honorary degree (Sc.D.) from the Polytechnic Institute of Brooklyn.

1953

Polaroid begins to develop **X-ray film** for the civilian market.

The product was originally developed for the military; however, the end of the Korean War curtails these orders. Polaroid's color-translating ultraviolet microscope, built with grants from the Navy and the American Cancer Society, is installed in Boston's Deaconess Hospital for use in cancer research. The auto headlight program is completely systemated by the auto manufacturers.

Polaroid continues its own development of Vectographs.

Polaroid grants a nonexclusive license on a royalty basis to Technicolor Motion Picture Company to make and sell Vectograph motion picture film. Another agreement ensures that Polaroid will supply Technicolor with the raw film stock and technical information for the production of Vectograph prints.

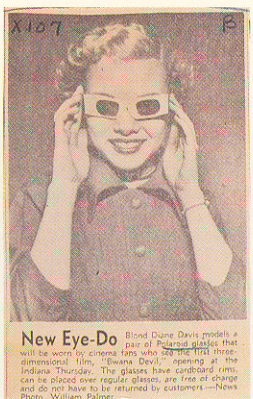
The popularity of 3-D movies suffers because of the poor quality of projection with two unsynchronized projectors.

Corporation: The Board of Directors authorizes a 50% stock dividend on common stock. Common stock increases from 407,375 to 750,000 shares.

Facilities: Construction of Waltham I (28,000 square feet) begins at a projected building cost of $400,000.

Sales of Polaroid expendable 3-D viewers die. Deliveries of photographic products are temporarily halted during the third quarter of the year by a strike in a supplier's plant. As a result, not all Christmas orders can be filled.

Dr. Land receives an honorary degree (LL.D) from Bates College. He is also elected Fellow, National Academy of Sciences.



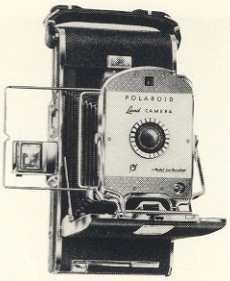
New Eye-Do Blond Diane Davis models a pair of Polaroid glasses that will be worn by cinema fans who see the first three-dimensional film, "Bwana Devil," opening at the Indiana Thursday. The glasses have cardboard rims, can be placed over regular glasses, are free of charge and do not have to be returned by customers.—News Photo. William Palmer.

The Indianapolis Indiana News

1954

The Speedliner Model 95A Land camera is based upon the original Model 95.

It features a wire frame viewfinder on the shutter housing instead of the original post and ball, as well as synchronization for both flashbulbs and electronic flash.

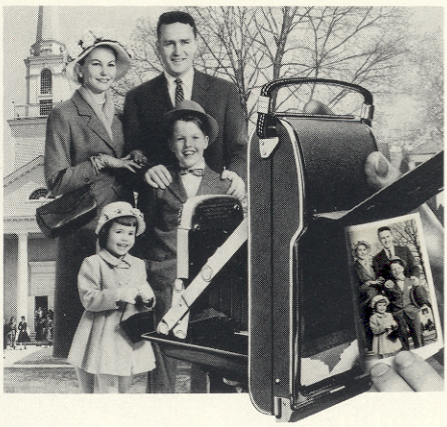


The **Model 100** debuts.

It features special long-life roller bearings and a heavy-duty shutter. The camera is for use in business and industrial applications.

Steve Allen begins live commercials for Polaroid on his *Tonight Show*.

For all their risk of failure, Polaroid Land camera demonstrations are ideal for live television. The commercials are 60 seconds long; demonstrators are familiar to millions of Americans, and even if the picture isn't perfect every time, the commercials illustrate Polaroid's prime copy point: *If the picture isn't good, you don't have to wait weeks to find out. You can tell right away and have another one 60 seconds later.*



The company also introduces the **Highlander Model 80**, a smaller, less expensive one-minute camera which makes wallet-size pictures ($2\frac{1}{2}$ x $3\frac{1}{4}$ inches) with Type 31 Land film. Over 3,000 dealers put the Highlander on sale, planning their local promotions to tie in with the company's national advertising campaign.

Dr. Land is appointed head of the Intelligence Section of President Eisenhower's Technological Capabilities Panel. Under his leadership, the group makes a number of recommendations relating to the technology of intelligence. The most prominent concept to develop from the Intelligence Section's report is the U-2 air reconnaissance system (and later, reconnaissance satellites. In 1962, this U-2 system will provide positive evidence of the presence of Soviet missiles in Cuba). In succeeding administrations, Land will influence new uses and applications of intelligence-gathering technology, benign in application and constructive to government policy making.

Facilities: Polaroid opens a Los Angeles warehouse and sales branch. In the spring, work begins in the new Waltham, Massachusetts manufacturing plant. This new picture roll plant costs about $1,000,000 and will provide some of the capacity needed for growing sales.

Corporate Culture: The Job Evaluation Compensation System is initiated. Group life insurance is added for company executives.

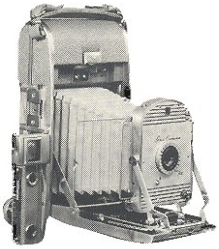
Personnel: David W. Skinner, Vice President of Production is also named Assistant General Manager. William J. McCune is named Vice President of Engineering. Allan Latham resigns as Director.

Net Sales	$23,500,675
Net Earnings	1,152,801
Occupied Space	293,000 sq ft
Employees	1,162

1955

PolaPan 200 Land picture rolls are introduced to the public.

The rolls (Type 32, Type 42, and Type 43) with increased film speed ratings receive consumer recognition for their quality. All have an increased contrast range. PolaPan 200 (Type 42 Land film) is the first panchromatic film sold by Polaroid. Type 32 Land film is similar to Type 42, but smaller, and also features a sixty-second development time. Type 43 Land film follows, producing black and white prints of exceptional quality as well as allowing a reusable negative under certain conditions.



Model 700 Land camera debuts.

The camera is similar to the Speedliner 95A, but features a built-in rangefinder.

NOW — BOUNCE FLASH WITHOUT GUESSWORK
SIMPLE NEW ATTACHMENT FOR POLAROID LAND CAMERA MAKES IT A CINCH TO GET TERRIFIC BOUNCE FLASH PICTURES.
POLAROID Land CAMERA

Bounce flash is premiered.

Research: Film for one-minute black and white slides and a filter for radar sets are under development. The filter removes glare, heightens contrast, and changes color and/or brightness at the turn of a knob.

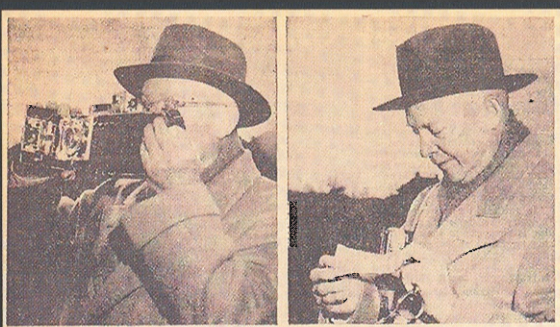
Land announces the first findings from experiments with color.

Corporation: Amended Certificates of Incorporation allow an increase of common stock from 750,000 to 1,000,000 shares. Profits increase 109% over 1954. The increase is attributed to better manufacturing facilities, advanced production and selling techniques, and economies in overhead.

Sales: Film purchases increase sales volume and may contribute to an upsurge in camera sales.

Personnel: Frank J. Lord is appointed Controller.

Dr. Land receives the Progress Medal from the Society of Photographic Engineers and an honorary degree from Colby College.



President Eisenhower, on His Gettysburg (Pa.) Farm, Takes Pictures, Removes Print From Camera

Polaroid Camera Inventor Now Ranks Among Modern Pioneers

One of America's modern pioneers is Dr. Edwin H. Land, of Cambridge, Mass.

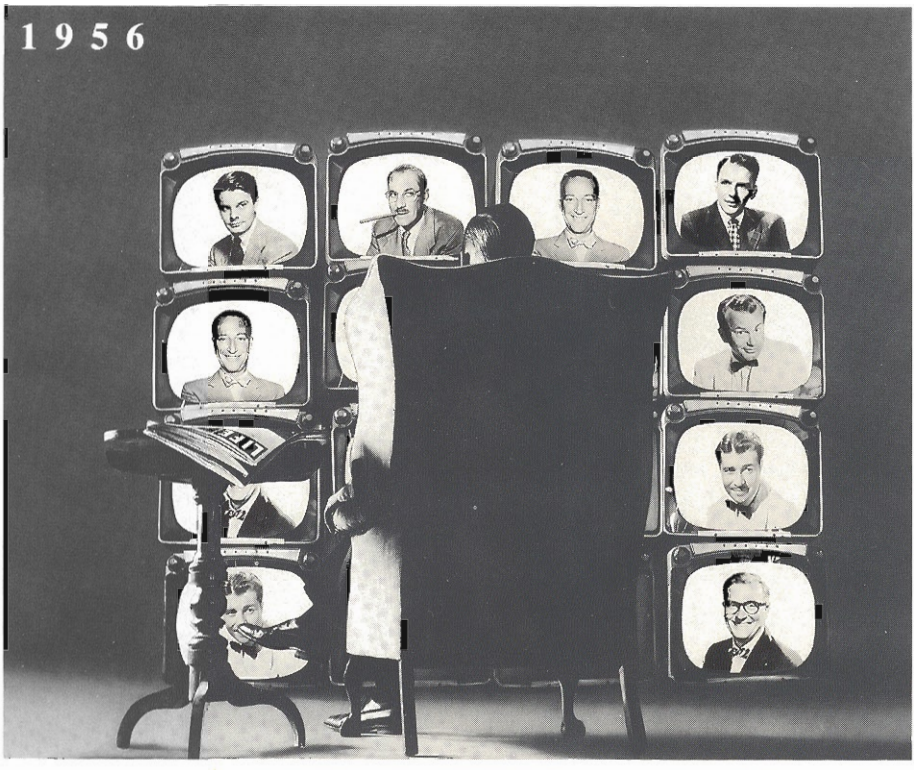
Dr. Land is the inventor of the picture-a-minute Polaroid camera that develops the picture right inside the camera and furnishes a positive print. He also is installed a recording device in an outer office where executives can express new ideas the moment they think of them—even when Dr. Land isn't present to hear them immediately. If the idea seems sound, he puts it to work right away. He dislikes delay.

stresses the advantages of simplicity of operation, speed in getting good-quality prints, and economy. Polaroid prints cost less than conventional prints, he contends.

One of the amazing aspects of the Polaroid camera is that it was

Reprinted courtesy of *Grit*, Williamsport, Pennsylvania

1956



Much of the advertising budget is spent on **network television programs.**

Yet there is a general decrease in the percentage of gross income allocated to advertising.

With instant black and white photography already developed, Land becomes committed to the idea of instant color photography. Polaroid, as Land says, *"has been dedicated throughout its life to making only things which others cannot make."*

The one-millionth camera, a Model 95A, comes off the assembly line in September.

It is sold at the Village Camera Shop in South Orange, New Jersey, on December 31. Type 44 Land film, a 400-speed panchromatic film with 60-second development time is distributed. It will be discontinued in 1963. Plastic sunglasses are improved to resist scratches.

Corporation: 305,532 shares are issued in February to common stockholders as a dividend, and 40,000 new shares are reserved for later issuance as part of the Polaroid Stock Option Plan.

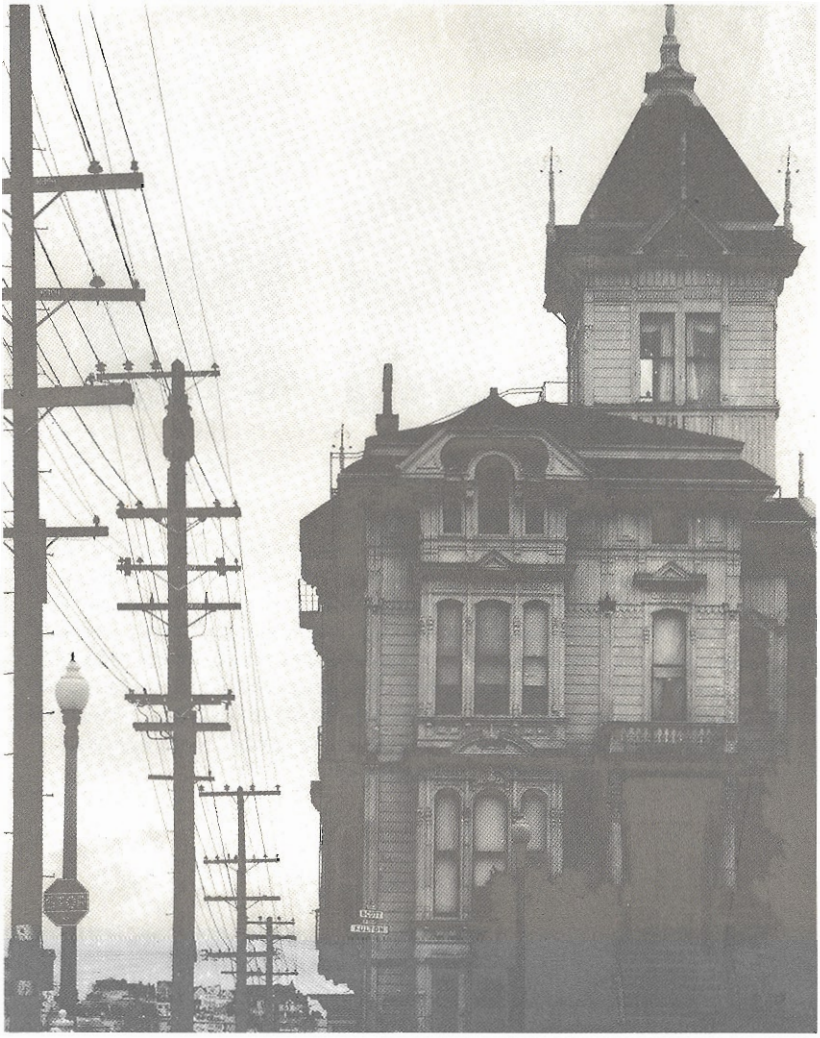
Sales: This year photographic products will contribute 93% of the total income. This year, $1,494,000 is spent developing new products and additional manufacturing facilities. Included in this sum is financing for research into color photography and the development of color film, and initial construction costs for the second picture roll plant, Waltham II.

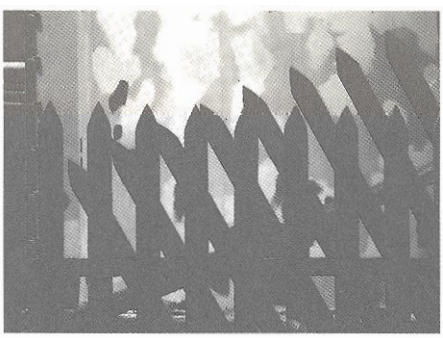
Corporate Culture: Polaroid initiates the Education Program. It includes a series of company courses which may be taken at local schools and colleges.

Facilities: Construction of Waltham II begins. The plant is designed to provide film production facilities similar to Waltham I and will go into operation during the summer of 1957.

Personnel: David Skinner is appointed General Manager. Robert Casselman is elected Vice President, Sales. Sterling Pile, a Director, dies.

Dr. Land is awarded the Howard M. Potts Medal from the Franklin Institute. He is also appointed a Fellow (Visiting Institute Professor) by the School of Advanced Study at MIT.





Nicholas Dean
Fence Nantucket, 1957
Polaroid PolaPan 4x5
Polaroid Collection

Pirkle Jones
Untitled, circa 1958
Polaroid PolaPan 4x5
Polaroid Collection

Photographer Nick Dean joins Polaroid to work on color film development.

Instead of the usual round of resumes and application forms, his audition is simply to spend a week taking photographs and making a list of everything he knows how to do—whether related to photography or not. Based on the prints and his list, Dean is hired.

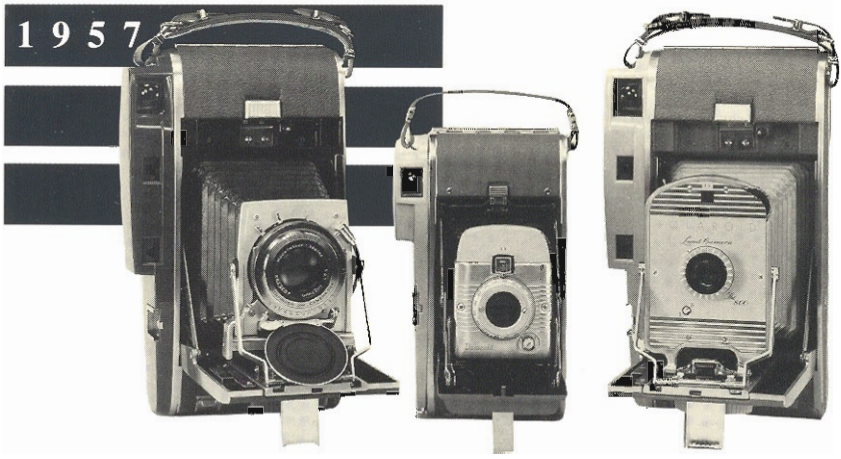
The Boston Daily Globe

U. S. A. LIKES IKE

Carries Massachusetts by 400,000

Parcolo Wins by Over 100,000

1957



110A 80A 800

Polaroid markets several new cameras:

The Highlander **Model 80A** Land camera; the Speedliner Model 95B Land camera; the Model 150 Land camera, the **Model 800** Land camera (replacing Model 700), and the **Model 110A** Land camera (replacing the Model 110). The Copymaker Model 208 premiers. It uses a Polaroid standard roll film camera which is mounted on a stand for making slides or paper prints from any text material, existing photographs, charts, graphics, titles, and small objects. The shutter numbering system is changed from the original Polaroid to *EV* (exposure value) system. The new system is incorporated into the Model 95A (which becomes the Model 95B) and the Model 80 (which becomes the Model 80A). Two exposure meters using the *EV* system are also introduced.

Chemistry: Polaroid instant transparency materials employ a transparent sheet to receive the positive image. The positive image is formed in the thin layer of processing reagent between the negative and positive sheets. When the positive sheet is separated from the negative, the reagent, containing the positive image, remains with the clear plastic positive sheet.

Once separated from the negatives, the transparencies must be stabilized by immersion in a Polaroid tank, called Dippit, which contains a solution that

Corporation: A 3-for-1 stock dividend is declared in October, and following the split, the stock is listed on the New York Stock Exchange, where trading begins on November 4. The number of shareholders doubles from 3,000 to 6,000.

Facilities: Construction of Waltham II is completed. A Polaroid Copy Service Department is established in Toronto.

Corporate Culture: General wages increase 5%.

Sales: Changes in the design and manufacture of the Model 110A make it possible to reduce its retail price; however, some cameras go up in price for the first time in the company's history. Markets expand to include military post exchanges and the sale of cameras as prizes or premiums.

Polaroid sunglasses contribute to an increase in polarizer sales of 39 percent over 1956.

Dr. Land receives an honorary Doctorate of Science from Harvard. He receives the Financial World Merit Award for the excellence of Polaroid's 1956 Annual Report. He also becomes a member of President Eisenhower's Science Advisory Committee, which advises the President on weapons and arms-limitation technology and educational reform in the sciences. (He becomes Consultant-at-Large in 1959 and remains as such until 1973.) He participates in a special committee panel which provides the design for the National Aeronautics and Space Administration (NASA). He is also awarded the F.W. Brehm Memorial Lecture Medal and the Progress Medal for 1957 from the Royal Photographic Society of Great Britain.

The Polaroid Transparency System is introduced.

It enables camera users to make finished black and white transparencies ready for projection in two minutes. The system includes slide mounts, projector, and copying stand. Polaroid introduces Type 46 ($2\frac{1}{4}$ x $2\frac{1}{4}$-inch) and Type 46L ($3\frac{1}{4}$ x 4-inch) Land **projection films**, both ASA 1000, for making transparencies. These transparencies retain sharpness and brilliance at substantial magnification.

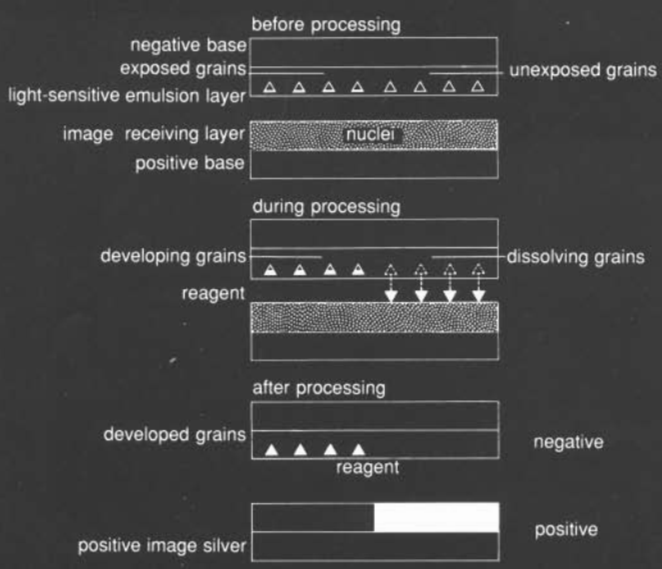
Polaroid spends a record amount on *live* advertising.

Steve Allen, Perry Como, and Jack Paar demonstrate Polaroid Land cameras on their nighttime talk shows.

Polaroid offers increasingly lower-priced models with greater technical competence. Land writes: *...many subsidiary and supporting inventions and insights are required to go from the thing in the mind to the thing in the world. These inventions are born of... total devotion to the perfection of the final outer reality.*

hardens the image layer. After treatment and drying, the transparency can be mounted and projected like a conventional trans-parency.

Technology: On December 12, the company announces that color film research has reached the point where full-color prints are being made in Polaroid cameras.



World Events

Sputnik, the world's first man-made satellite, is launched by the Soviets.

The Edsel *is* introduced by Ford.

Mao Tse-Tung launches *A Great Leap Forward.*

The National Committee for a Sane Nuclear Policy (SANE) is founded.

1958 The Print Copier is introduced along with improved PolaPan 200.

PolaPan 200 is a black and white film that delivers sharper photos and allows the user, by varying the development time, to control contrast and facilitate home copying. Many cameras feature improved viewfinders which correct for parallax and size of field. The company improves Type 1001 Land film by increasing the speed to 200 and making it **panchromatic**. The company also introduces the Polaroid Timer Model 120.

One-step photography is extended to conventional studio and press cameras.

The of Series 50 Land films (Types 52 and 53) and the **4x5 film holder** become almost indispensable proofing tool for the professional photographer. Film packets, with the sandwich of positive and negative sheets plus processing pod, are enclosed within a black protective envelope. The 4x5 film holder incorporates processing rollers similar to those in the camera back, and the sandwich is pulled all the way out of the film holder for processing, protected against light by the envelope.

Research is underway for an electric-eye accessory which will provide correct exposure in any outdoor light.

Facilities: The company purchases 49 acres next to the Waltham site, and a third building is begun in the fall. The first Needham warehouse is leased, and warehousing and distribution are moved to this site.

Corporation: Polaroid products are distributed in 45 countries worldwide. In the fall, the company holds an exhibit at the Photokina exposition in Cologne, West Germany. Polaroid overtakes Bell & Howell in net sales, to become the third-largest corporation in the US photographic industry, behind Eastman Kodak and General Aniline & Film.

Corporate Culture: Polaroid initiates a Tuition Assistance Plan for employees, refunding full tuition to employees who complete approved courses.

Personnel: I.M. Booth begins working in Polaroid's Film and Engineering Division. Dr. Elkan R. Blout is elected Vice President and General Manger of Research and is appointed a member of the Operating Policy Committee.

Dr. Land is appointed Fellow, Royal Photographic Society of Great Britain and an Honorary Fellow, Royal Microscopical Society.

Net Sales.....$ 65,271,000
Net Earnings.....7,211,000
Occupied Space.....660,000 sq ft
Employees.....2,061

1959

Type 47 Land film, rated at 3000 ASA, becomes the fastest film available.

This film allows Land camera owners to take indoor pictures without flashbulbs. Type 37 Land film offers 3000 ASA in a small $2\frac{1}{2} \times 3\frac{1}{4}$-inch size. Type 32 Land film speed is increased to 400 ASA.

The Model 80B Land camera and the 625 Exposure Meter are introduced. Polaroid pioneers the photoelectric shutter, introducing an independent unit which attaches to the regular shutter of Model 150 and similar Land cameras for use with 300 speed film.

Dr. Land believes that: *the business of the future will be a scientific, social, and economic unit. There will be a different kind of boundary between management and labor. All will regard themselves as labor in the sense of having as their common purpose learning new things and applying that knowledge....*

Polaroid markets the **Wink Light** Model 250 and Model 252.

These feature a low-powered, repeating flash for shooting indoor pictures without flashbulbs. The Wink Light is clipped to the Land camera and automatically emits a *wink of light* when the shutter clicks, eliminating dark shadows without destroying the highlights or creating harsh contrasts. The Wink Light is the first in a series of increasingly sophisticated lighting accessories that ultimately lead to the 400 Series Focused Flash cameras (introduced in 1971) and Sun 600 Light Management System (introduced in 1981).

Technology: At a stockholders meeting Land makes a color picture in a standard camera using hand assembled lab film.

Corporate Culture: Polaroid begins the Pathfinder Program under Paul Davis, a program that allows people on the production line to spend half of their time assisting in research, in the library, in sales, or as secretaries. This innovative management strategy, designed by Dr. Land, speaks to his efforts to enable industry to tap the creative potential of its participants. In addition, the incentive bonus plan is extended to all employees.

Subsidiaries: Polaroid forms two wholly owned international sales subsidiaries in West Germany and Canada. The company opens a new sales office and distribution center in Dallas, Texas, and a third regional warehouse and distribution center in Chicago, Illinois.

Facilities: Building I in Waltham is enlarged by 30,000 square feet. Construction of Building III begins in Waltham, and Building IV is in operation.

Honors: Polaroid is given the Department of Defense Reserve Award for outstanding cooperation with reservists and reserve activities.

Personnel: Dr. James R. Killian, Chairman of the Corporation of the Massachusetts Institute of Technology and Special Assistant to President Eisenhower for Science and Technology is elected as a Director of Polaroid.

Dr. Land receives an honorary degree (Sc.D.) from Northeastern University.

Net Sales	$89,918,535
Net Earnings	10,742,922
Occupied Space	538,000 sq ft
Employees	2,505

CASTRO HAS ALL CUBA

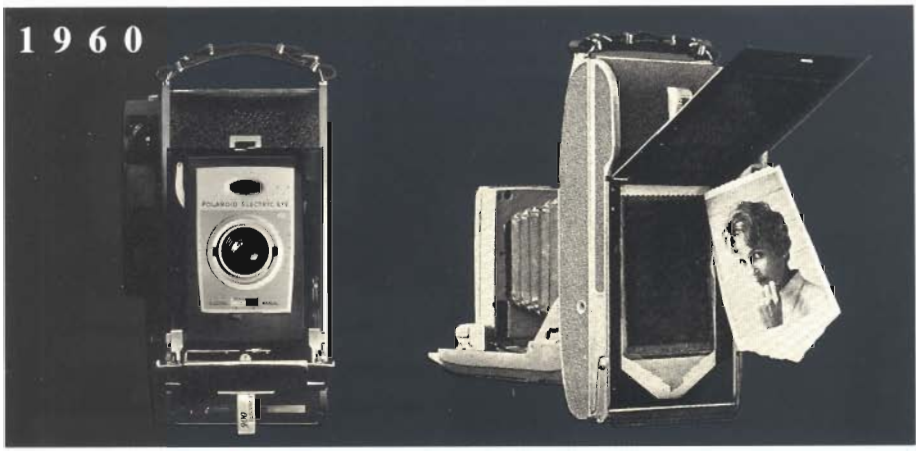
Boston Evening Globe

Havana Is Tense As Rebels Enter City in Triumph

Some Sauce in Streets After Batista Flees

Schmidt on Spot As Rebels Rule Slumping Bruins

1960



Polaroid introduces its first automatic exposure camera: **Model 900** with Electric Eye.

It is capable of handling all picture-taking situations indoors and out, at night or by day.

An improved descendant of the original Model 110 Pathfinder Land camera, the Model 110B is released. Similar to the Model 110A, it also features a single-window combined rangefinder/viewfinder with a projected frame system.

Research: A series of inventions in chemistry lead to the reduction of all black and white film development times to 15 seconds. The reduction in development time is accomplished without sacrificing any of the qualities that characterize Land films. The time of development within the camera is not critical and in fact provides a useful control of contrast for those who wish to take advantage of it: prints of medium contrast are produced in the 10-15 second development range, and noticeably higher contrast results in the 15-20 second range. Development times of 60 seconds or more produce prints of high contrast.

Technology: Dr. Land gives a *progress demonstration* of Polaroid's color film at the company's annual shareholders meeting by taking three pictures with a Model 800 Land camera.

Facilities: One hundred acres of reservoir property is purchased, the new Needham warehouse is completed for leasing, and Building III at **Waltham** is completed.

Subsidiaries: Polaroid establishes its Japanese subsidiary, Nippon Polaroid Kabushiki Kaisha, and a manufacturing agreement is reached to produce two camera models for overseas markets in Japan. The company also forms an Italian subsidiary and Polaroid Overseas Corporation (headquartered in Nassau).

'Employee Happy on Job, Means Job Is Happy With Him!

Polaroid Offers Educational Program to Its Employees

By VIRGINIA BRIGGS

"Photography is out to serve everyone today—from shutterbugs focusing on tulip blossoms to satellite meteorologists studying cloud formations flashed back to earth from Vanguard I in orbit.

Current study is a prerequisite to cope with the ever increasing and staggering demands. But study is not necessarily limited to scientists and research workers.

Polaroid Corporation, Cambridge, encourages all its personnel to study: clerks, assembly workers, model makers, machine operators as well as chemical supervisors, laboratory technicians, engineers and vice presidents.

Dr. Edwin H. Land, president of Polaroid and a pioneer in adult educational programs, fosters this policy.

"If an employee is happy in his job, then the job is happy with him," declared the photographer Ansel Adams, consultant at Polaroid, who is giving a course in "Expressive Photography" for Polaroid employees. A resident of San

ANSEL ADAMS, photographer and Polaroid consultant, exposes Polaroid employees to the aesthetic values of photography in a six-weeks' course at the Cambridge corporation.

sense of excitement, a new motivation in their jobs and a sense of participation," Adams maintained.

His course, which runs for six weeks from 4:30-6 p.m., has attracted about 120 Polaroid workers. Adams is assisted by Gerry Sharpe, a young camera expert also from San Francisco.

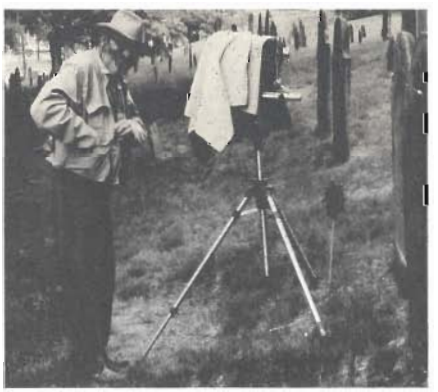
All the courses offered at Polaroid are not specifically job related but are designed to broaden the mental outlook of the employees and to show

Anthony Marvinkowski of the Wink Light Department said, "I limit photography to my job, but I want to know more about all phases of it."

CAMERA CLUB *Notes*

Reprinted courtesy of *The Boston Globe*

Ansel Adams
Gravestone detail, Bolinas, California, 1959
Polaroid PolaPan 4x5 Land Film Type 52
Polaroid Corporate Archives



Photographer Unknown
Ansel Adams, 1958
Polaroid Type 47 Land Film
Polaroid Corporate Archives

1961

Polaroid releases two electric-eye cameras, the **Model J66 and Model J33** in the $75 to $100 range.

Model 120 and Model 160 Land cameras for international markets are manufactured for Polaroid in Japan. The Model 850 Land camera and the Model 900 Land camera are introduced. The cameras offer better depth of field. Both cameras are designed, tested, and produced in a quarter of the projected time.

Type 55 P/N Land film is introduced.

The film, designed for professional photographers, produces a finished paper print and fully developed negative in 20 seconds. The negative is designed to be used, after final treatment, for printing and enlarging conventional photographs.

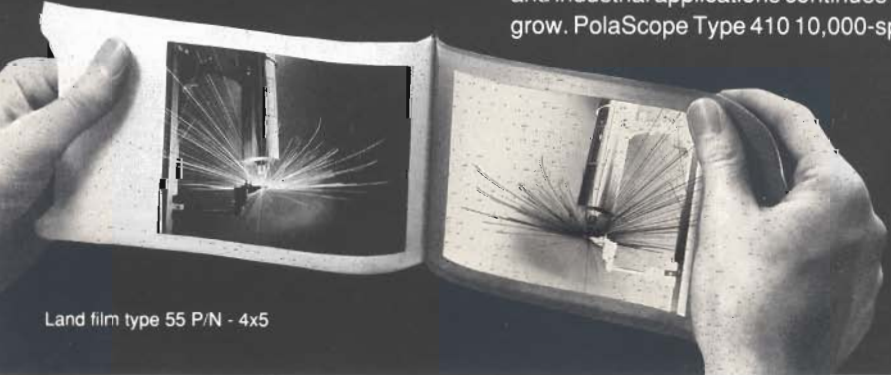
Polaroid further expands its line of 4x5-inch professional pack films with Type 57.

FIRST SHOWING OF A NEW POLAROID LAND FILM. This is an enlargement of an actual 60-second picture of Louis Armstrong. It was taken with a new film, just introduced, which is twice as sharp as the previous film.

Engineering: Improvements in film products result in more successful, more enjoyable instant picture taking for the amateur user.

The company introduces Type PolaLine 146L projection film for crisp, high-contrast lantern slides.

Type 55 P/N film will be used in 1961 in the Gemprint system, developed by researchers at the Weizmann Institute of Science in Israel to record the light pattern of diamonds, as part of a computerized diamond identification system. Polaroid's commitment to products for medical, scientific, and industrial applications continues to grow. PolaScope Type 410 10,000-speed



Land film type 55 P/N - 4x5

With this latest development, the Polaroid Land Camera not only gives you pic-
tures in 60 seconds, but pictures of exceptional clarity and brilliance. Polaroid
Land Cameras start at $72.75. The new film can be identified by a star on the box.

The *Point-source bounce* flash, a flashgun the size of a man's thumb, is designed to be built into the Model J66. A flash spread by the tiny reflector covers ceiling and walls in such a uniform way that daylight-like lighting is produced. The flashgun swivels to give both bounce and direct flash for vertical or horizontal pictures.

Polaroid continues to commission artists as consultants during the early 1960's.

In part to help bring the instant photography process more into the public eye, a variety of photographers, some widely accomplished and others young and untested, are given Polaroid equipment and film and told to experiment freely. They include artists like Bert Stern, Phillipe Halsman, Marie Cosindas, Brett Weston, Arnold Newman and Yousef Karsh.

Louis Armstrong and **Bert Stern** are featured in a 1961 Polaroid advertisement.

film is released in August for use in photographing oscilloscope traces. It is marketed to the fields of physics, astronomy, underwater research, and photo-micrography. Type 3000 X Land film is a panchromatic radiographic film which produces a positive 10x12 X-ray picture in 10 seconds. The company's scientists develop a polarizer which in addition to polarizing visible light also polarizes ultraviolet radiation in the spectrum region of interest to astronomy, space science, and other fields of research.

Further applications of Polaroid research result in the development of an experimental tantalum carbide lamp which is 25% brighter and lasts 50% longer than conventional tungsten lamps.

Dr. Land becomes a member of President Kennedy's Foreign Intelligence Advisory Board and continues his scientific and advisory role in the development of new intelligence-gathering technology such as reconnaissance satellites. He is also awarded the Golden Society Medal by the Photographic Society of Vienna.

Personnel: Herbert S. Kassman is appointed Assistant Secretary.

Subsidiaries: A sales subsidiary begins operation in France.

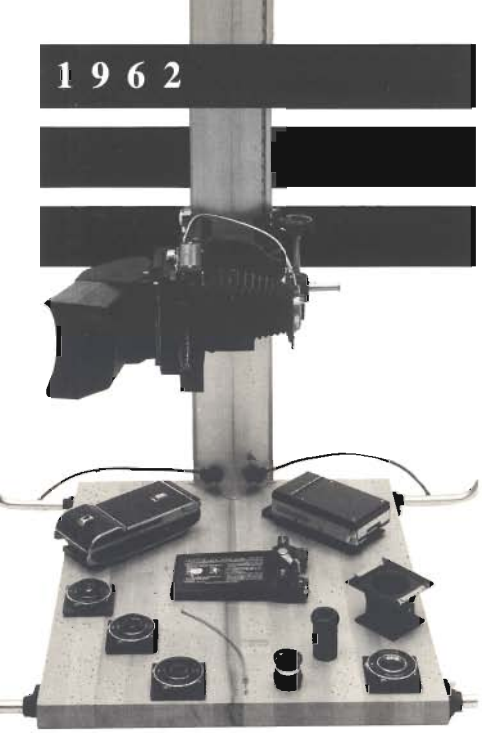
Net Sales	$101,478,000
Net Earnings	8,111,000
Occupied Space	1,130,000 sq ft
Employees	3,119

The Boston Globe

Kennedy Offers World New Start for Peace

Vow to New Nations: Won't Allow Tyranny

1962



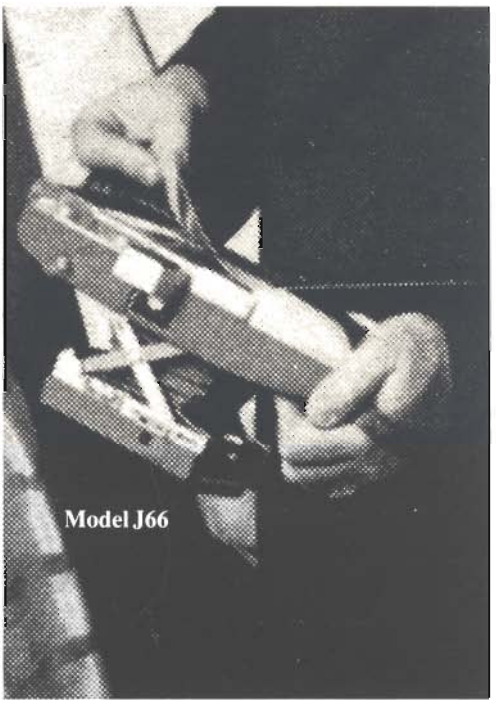
The Polaroid **MP-3** Land camera is introduced.

The MP-3 will be used in research laboratories, hospitals, universities, and industrial plants. It is a versatile copy camera, valuable for macro-photography, microphotography, copying, etc. It features an interchangeable lens and sheeter combination. With interchangeable film backs, the camera can be tilted 90 degrees for maps, wall charts, etc. The camera can use all 40 Series roll films, 80 and 100 Series pack films, and 50 Series 4x5-inch films, as well as wet process 4x5 inch roll and 35mm films.

Polaroid polarizers are used in a Raytheon product that stores radar signals as television images.

The Model 160 Land camera goes on sale in international markets, replacing the Model 800 Land camera.

Jack Paar and Andy Williams are slated to introduce Polaroid's new color film in commercials.



The advertising firm of Doyle Dane Bernbach created award-winning ads that emphasized the spontaneity of instant photography.

Facilities: New sales offices and regional distribution centers are opened in Cleveland, Ohio, and Atlanta, Georgia.

Subsidiaries: Polaroid UK Limited is incorporated in the United Kingdom.

Personnel: An X-ray division is formed in June with Vice President Robert Casselman as Division President. Elkan Blout resigns to become a Professor at Harvard Medical School. Richard W. Young is appointed Assistant Director of Research.

Occupied Space....1,228,000 sq ft

Sales: The number of Polaroid Land camera owners exceeds four million. Photographic products account for 96% of the total income.

The Boston Globe

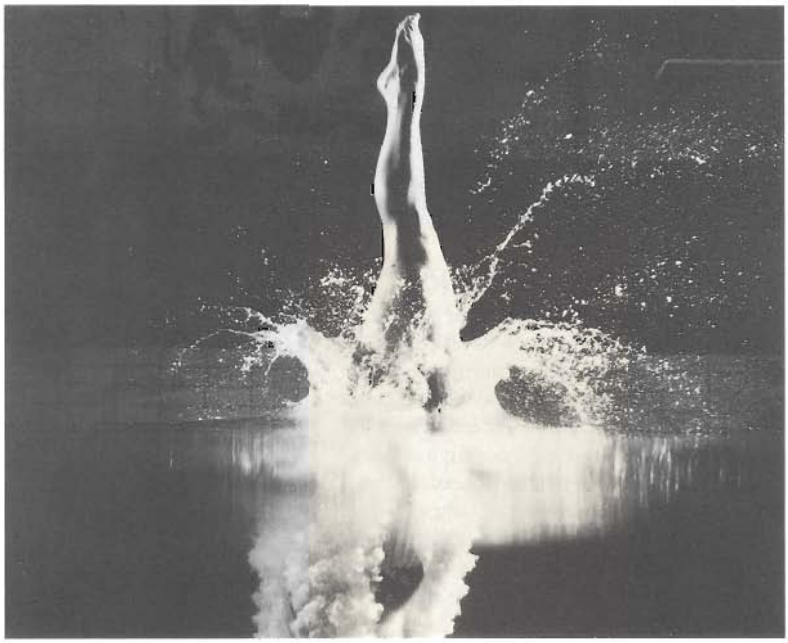
JFK ORDERS CUBA BLOCKADE; IF CASTRO LOOSES ROCKETS, U.S. WILL STRIKE AT SOVIETS

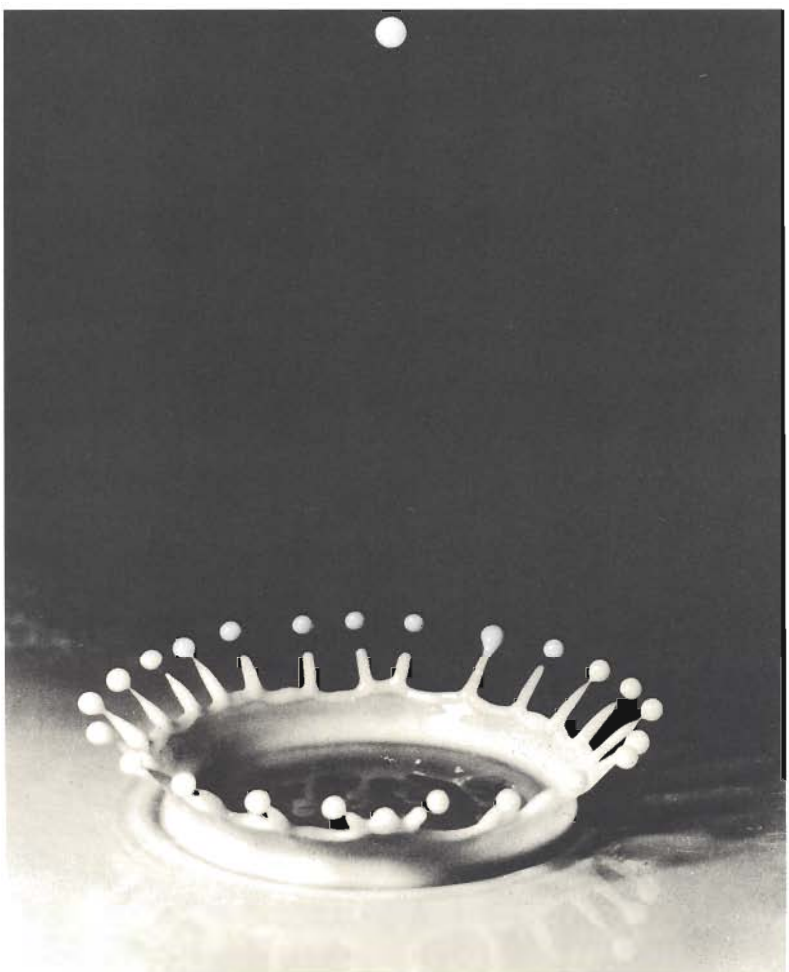
Philippe Halsman
Jean Cocteau, Ricki Soma-Huston and Leo Coleman, Dancer, 1949
Polaroid PolaPan 4x5 Land
Film Type 52
Polaroid Collection

Philippe Halsman
The Birds, 1963
Polaroid PolaPan 4x5 Land
Film Type 52
Polaroid Collection

Harold Edgerton
Diver Entering Water, ca 1962
Polaroid P/N 4x5 Land
Film Type 52
Polaroid Collection

Harold Edgerton
Splash of a Milk Drop, ca1960
Polaroid P/N 4x5 Land
Film Type 55
Polaroid Collection

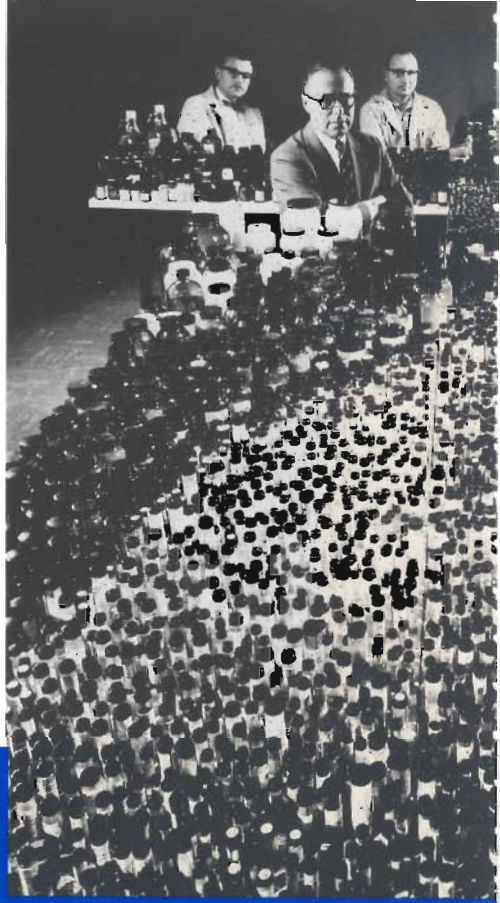




1963

Polaroid debuts Polacolor

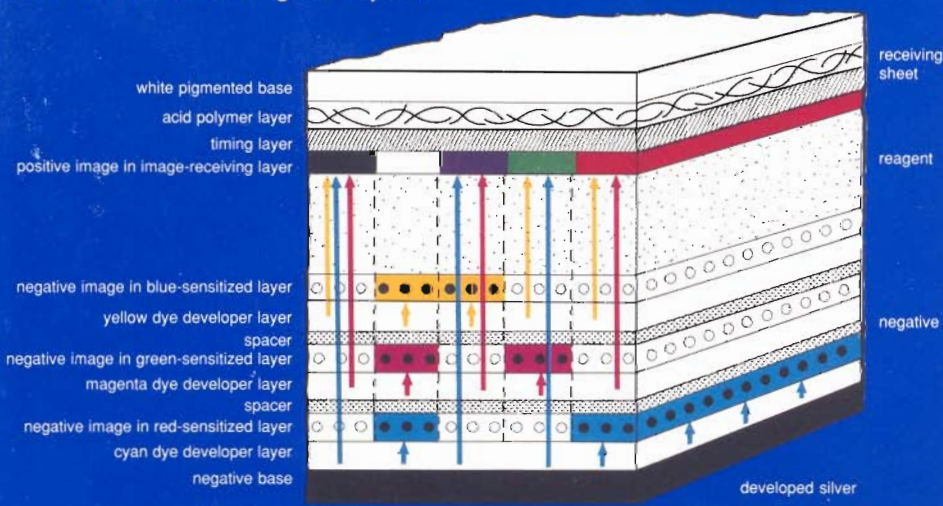
Type 48 and Type 38 Polacolor Land roll film. Intensive research begun in 1948 leads to Howard Rogers's invention of the dye developer molecule, upon which the successful instant color system is based. Polacolor uses pre-formed dyes placed in the negative at the time of manufacture to produce the color print. This replaces the *coupler* method, wherein dyes are formed in the print during processing. Another important invention, the self-washing receiving sheet, eliminates the need for a print coater.

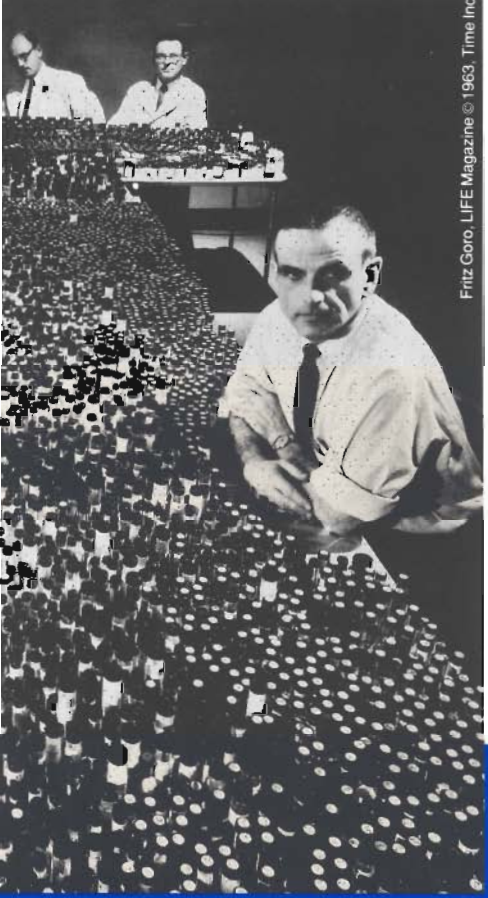


Chemistry: Dye developers combine in a single molecule a preformed dye and a silver halide developer. In its reduced form, dye developer is alkali-soluble, but insoluble in water. In an alkaline medium, reaction with silver halide in exposed areas immobilizes the dye developers, while in unexposed areas, it is free to transfer to the image-receiving layer to form a positive image.

Surrounded by 5,000 bottles of new chemical compounds, the number they had to make before finding the right ones, are six of the men most concerned with perfecting Polaroid's color. Howard Rogers (right foreground) invented the molecule which represented the big breakthrough in developing the film. The five

Polacolor film unit during development




Fritz Goro, LIFE Magazine © 1963, Time Inc

chief chemists in the background, aided by 75 others, spent five years creating the proper combination of chemicals to put Rogers's molecule into the new film.

The Receiving Sheet: The chemistry of the positive sheet developed by Dr. Land is also unique. Three principal layers in the positive structure serve as an ionic *hold and release* mechanism. This mechanism renders a polymeric acid layer virtually inactive until the negative is developed (a process that requires an alkaline environment) and the positive image is formed. A *time-modulating* layer above the polymeric acid controls the processing time. Near the end of the processing period the alkali ions permeate this layer and reach the polymeric acid, where they react with it. The system is rendered acidic, the process is stopped, and the image stabilized. During this process, the polymer molecules in the surface layer draw the dyes, embedding them in a tough clear coating. The entire image-forming process takes about one minute.

Fritz Goro, LIFE Magazine © 1963, Time Inc

When I started the actual program of making the black and white film for our camera, I set down the broad principles that would also apply to color. I invited Howard Rogers...to sit opposite me in the black and white laboratory and think about color. For several years he simply sat and...assimilated the techniques we were using in black and white. Then one day he stood up and said, "I am ready to start now." My point is that we created an environment in which a man was expected to sit and think for two years. E. H. Land

Polacolor film is based on the subtractive color process: positive images are formed of the subtractive primary colors—cyan, magenta, and yellow—and layered on the black and white film emulsion to produce a full-color image. The film negative contains three layers of silver halide emulsion, each sensitive to light in one of the primary colors: blue, green, or red. Under each emulsion layer is a layer of dye developer molecules in the complementary colors: yellow, magenta, or cyan. When the grains in a silver halide layer are exposed to light and developed, the underlying dye developer containing the complementary color has to be blocked from migrating to the positive receiving sheet. Where the grains are not exposed and developed, the dye molecules are free to transfer to the image-forming positive. Thus, the development of blue-light-exposed silver halide blocks the transfer of the yellow dye developer, allowing magenta and cyan to pass; green light blocks magenta but allows yellow and cyan to reach the image-forming layer; red blocks the cyan dye-developer but allows the magenta and yellow to pass; white light, a combination of all three primary colors, blocks all three complementary colors.

new kind of camera new kind of film

together they make color pictures in 50 seconds

The Model 100 Land camera,

Polaroid's first fully automatic pack camera and the first camera ever to employ a transistorized electronic shutter for completely automatic exposure control, is designed for use with the new film. This shutter system, a Polaroid design consisting of only five principal moving parts, anticipates the commercial introduction of electronic shutters by other shutter manufacturers.

Electronically controlled shutter timing for automatic exposure control is first used for the Model 100 Land camera.

A major change in film handling also comes with the Series 100 film packs and cameras introduced this year. The flat film pack (Type 107 black and white and Polacolor Type 108) format substitutes individual negative and positive sheets for the negative and positive rolls in a flat pack. The pack camera still incorporates pressure rollers to burst the pod and spread the reagent, but the negative and positive sandwich now emerges straight out of the camera. To protect the positive and negative sheets against light fogging during processing outside the camera, both sheets incorporate opaque black layers. The film pack also eliminates the need for waiting to complete processing of one print before the next picture can be taken and processed. Pack films are available in ASA 3000 high-speed black and white, and the new Polacolor film. The CB-100 Land camera back adapts various industrial and scientific instruments to use Polaroid Type 107 and Type 108 films.

Corporation: Both classes of preferred stock are retired so that all equity is in outstanding common stock.

Personnel: W. McCune, formerly Vice President of Engineering, is elected Vice President and Assistant General Manager. Carlton Fuller retires but remains as Director. J. Harold Booth enters retirement. Robert Casselman resigns to engage in consulting activities. Arthur Barnes is appointed Vice President and Manager, Film Division. Paul E. Sullivan is appointed Vice President, Purchasing; Otto E. Wolff is appointed Vice President, Engineering; Richard W. Young is appointed Vice President, Assistant Director of Research. Craig D. Woodruff is appointed Assistant Vice President, Foreign Operations. Frank J. Lord is elected Treasurer and Member of the Operating Policy Committee. Charles Johnson, Sr., and George Bramhall are elected to replace Tom McCole and Jim Tracy as members of the Retirement Committee.

Development of ultrasonic echo ranging technology for sonar auto-focusing systems begins. This will play an integral role in the development of the Autofocus and Spectra cameras and will also result in a number of non-photographic products.

Facilities: Purchase payment of the reservoir property is completed and an option is taken on land in New Bedford. Waltham III is organized for pack film manufacture.

Honors: Polaroid receives the "E" award from President Kennedy for excellence in exporting.

Dr. Land's work in government, industry, science, education, and photography is recognized when President Johnson awards him the Presidential Medal of Freedom, this country's highest civilian award. He serves on the President's Science Advisory Commission, is selected an Honorary Member of the German Photographic Society, and receives the Proctor Award from the Research Society of America.

1964

The **Model 101** Land camera,

similar to the Automatic 100, but lower priced, is released. The new camera utilizes just two apertures—one for color, one for black and white—which the user sets with a simplified film selector (the Automatic 100 uses four apertures). A special-markets version of the Model 101, the Model 102 Land camera, is also introduced.

Other products released this year include the **CU-5 Close-up camera** and an improved model of the MP-3 Land camera, featuring an interchangeable roll and pack film back and ground glass scribed for four instead of three film formats.

This year Polaroid expands its line of scientific and industrial products with the introduction of **Type 510** Land film, featuring high-contrast reproduction for industrial applications and Type 413 Infrared Land film for use in laser research, military surveillance, and document analysis.

The 5 millionth Polaroid Land camera, an **Automatic 100**, comes off the assembly line in Little Rock, Arkansas.

Corporation: A 4-for-1 split of stock is authorized.

Corporate Culture: Polaroid receives formal recognition from Governor Peabody and President Johnson for its participation in both state and national Equal Opportunity programs

Subsidiaries: Eighty thousand square feet is leased for a film plant in the Netherlands, and film manufacturing begins for the Common Market.

Dr. Land is nominated to the National Commission on Technology, Automation, and Economic Progress by President Lyndon Johnson. He receives an honorary Doctorate of Science from the Carnegie Institute of Technology. He is also named first winner of the New England Council Award for distinguished service to the regional economy. He is also awarded the US Camera Award for contributions to photography and is inducted into the International Photography Hall of Fame.

World Events

Emmet Leith and Juris Upatnieks apply the newly invented helium-neon laser to the principles of wavefront reconstruction advanced in 1948 by Professor Dennis Gabor.

President Johnson wins the election.

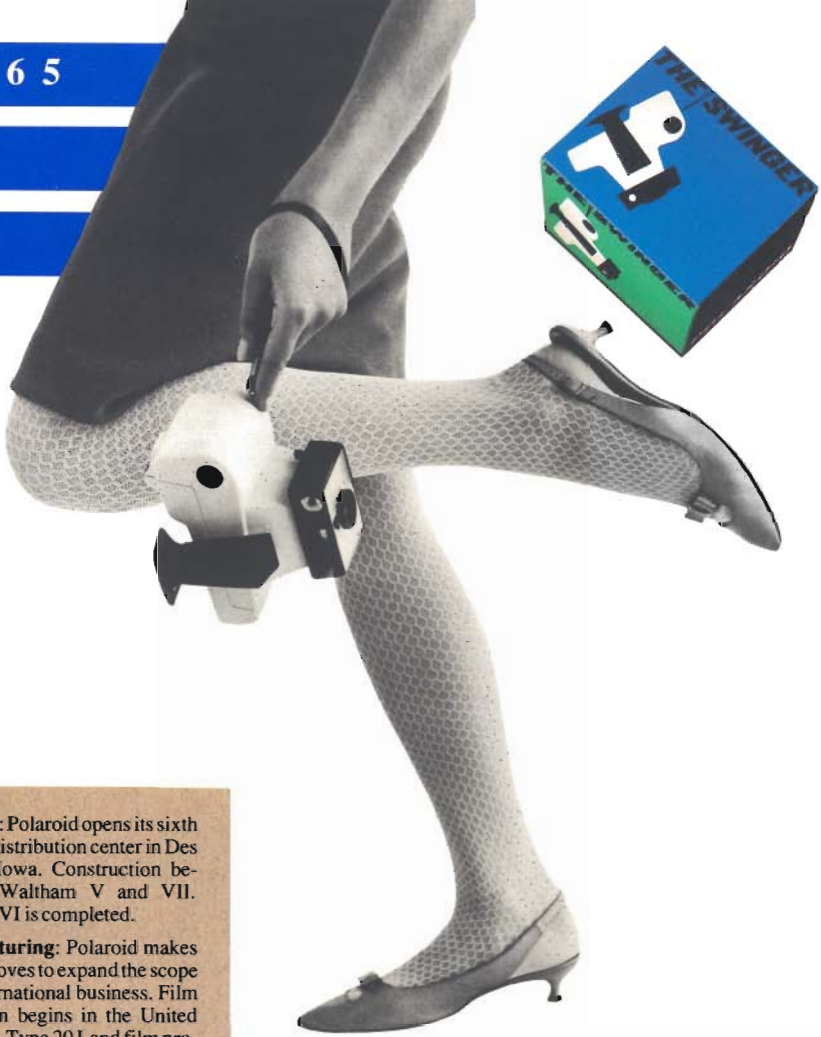
EXTRA EXTRA

PRESIDENT SLAIN

Assassin's Bullet Fells Kennedy on Dallas Street

Boston Globe

1965



Facilities: Polaroid opens its sixth regional distribution center in Des Moines, Iowa. Construction begins on Waltham V and VII. Waltham VI is completed.

Manufacturing: Polaroid makes several moves to expand the scope of its international business. Film production begins in the United Kingdom. Type 20 Land film production begins in the Netherlands to serve the European Common Market. New camera assembly lines begin in Little Rock, Arkansas; Chicago, Illinois; Dundee, Scotland; and Japan.

Subsidiaries in Switzerland, Belgium, and Australia are incorporated. Polaroid International is inaugurated in Amsterdam to serve as the company's European Marketing Headquarters.

Personnel: Craig Woodruff resigns to enter teaching. James Richard is appointed Vice President, Human Relations. Mark Sewall is appointed Assistant Vice President, Product Development. Peter Wensberg is appointed Assistant Vice President, Advertising.

Net US Sales	$204,003,000
Net US Earnings	28,679,000
Net Intl Sales	24,335,000
Net Intl Earnings	603,000
Occupied Space	1,671,000 sq ft
Employees	4,987
Shareholders	42,000

Corporation: Polaroid agrees to work with Texas Instruments, Inc., toward the development of a closed-circuit television. The company announces plans to move into the document copying field. The company files a Registration Statement with the SEC regarding a secondary offering of 460,000 shares of stock held by Edwin Land, Helen Land, James Warburg and Edwin H. Land-Helen Land, Inc.

Dr. Land is elected to the National Academy of Engineering, selected as recipient of a medal from the Industrial Research Instituteandawardedthe Charles F. Kettering Award at a conference sponsored by the Patent Trademark and the Copyright Research Institute of George Washington University, commemorating the 175th anniversary of the US Patent System.

The award-winning Swinger advertising campaign launches the career of an unknown starlet named **Ali MacGraw** (below right). A popular television spot features a bikini-clad MacGraw swinging to the beat of the distinctive Swinger jingle.

The inexpensive Polaroid **Swinger** is introduced.

The Swinger (Model 20 Land camera), a $20 camera which takes only wallet-size black and white photos, is introduced on a Friday in Canada. Eighty percent of the original allotment is sold by Monday night and the rest by the end of the week.

An important innovation in shutter design opens the field of very low cost one-step cameras. The simple yet highly accurate 'YES' photometer compares two opposite checkerboard patterns, one illuminated by the subject and one by a fixed internal light. The 'YES,' although always present, is visible only when the checkerboard is not—i.e., when the two fields are matched. To set the lens aperture, the photographer simply rotates the trigger knob which controls both apertures until the word 'YES' appears and depresses it to take the picture. Special-market versions of the cameras are also released.

The Swinger returns to the roll film concept, but is nevertheless compact.

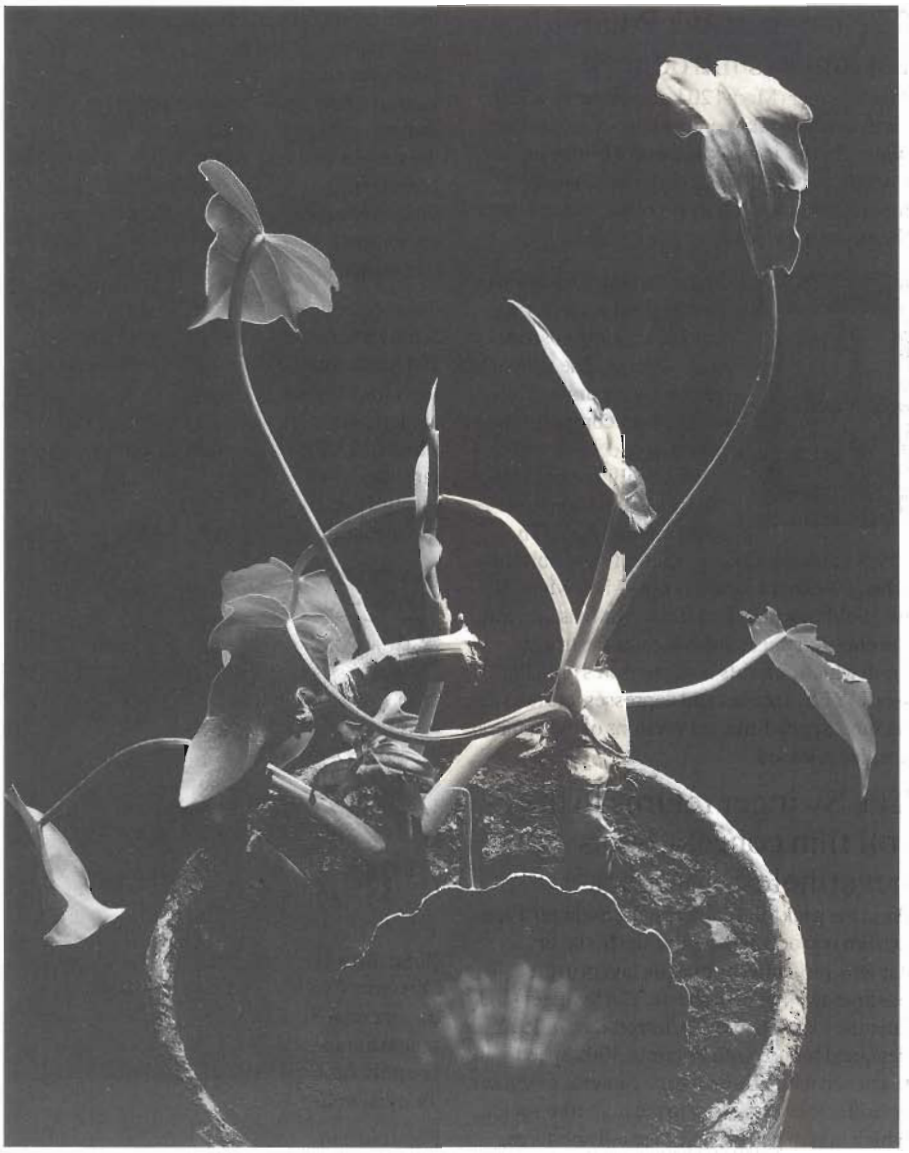
As in the pack film cameras, the Swinger Type 20 film is processed outside the Swinger camera, protected by opaque layers in the positive and negative sheets. The Swinger (and later the inexpensive Zip, introduced in 1972) is designed for use with Polaroid 3000 speed black and white films. These cameras owe their considerable versatility to the high film speed, which in turn permits use of small apertures, assuring good depth of field, and the 1/200-second fixed shutter speed, which minimizes the effects of motion.

Improvements in other photographic products lead to sales of the Model 180, a nonautomatic pack film camera for professionals and advanced amateurs; the Instant Portrait Land camera, which produces 6 different portraits of the subject on a single sheet of Polaroid 4x5 Land film; and the XR-7 Diffraction Cassette, which reduces the time required for X-ray crystal analysis from over an hour to less than five minutes.

Other products introduced: the Model 103 Land camera, which is similar to the Model 101 but features a plastic body and does not in-clude a tripod socket; the Model 135 Land camera, a special-markets version of the Model 103; the Model 104 Land camera, similar to the Model 103 but featuring a 2-element plastic lens; and the Model 125 Land camera, the special-market version of the Model 104.

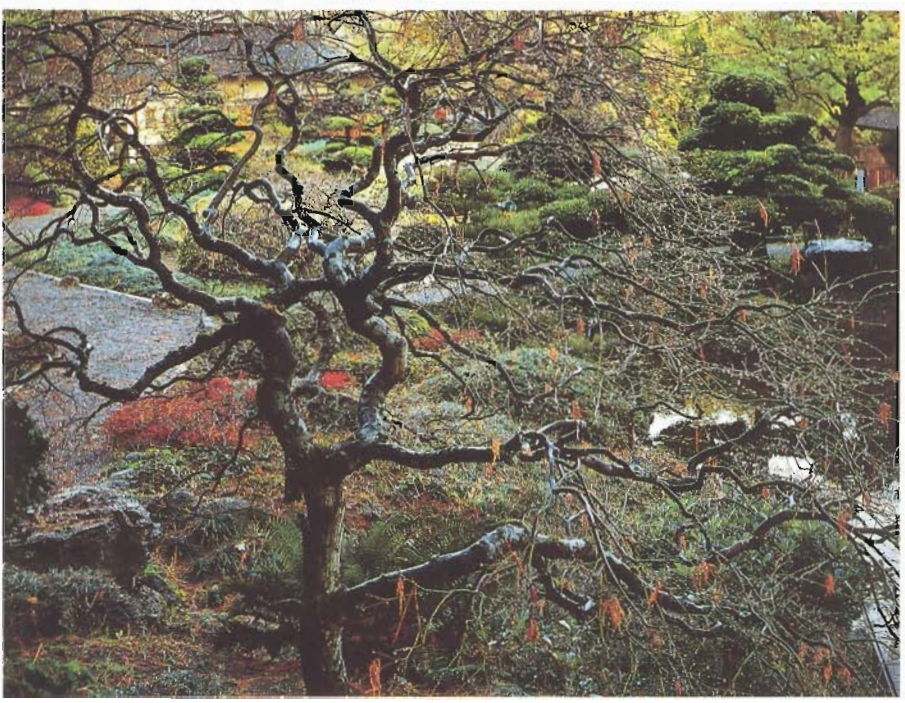
Polaroid advertising wins the New York Art Directors Club gold medal for best color TV commercial, plus awards from *Printers Ink* magazine and the American Institute of Graphic Arts and first prize from the American Television Commercial Festival.

Polaroid underwrites its first public television program, *The French Chef* with Julia Child. It runs for 207 episodes and wins an Emmy as the best educational television program.



Paul Caponigro
Untitled, 1961
Polaroid P/N 4x5 Land
Film Type 55
Polaroid Collection

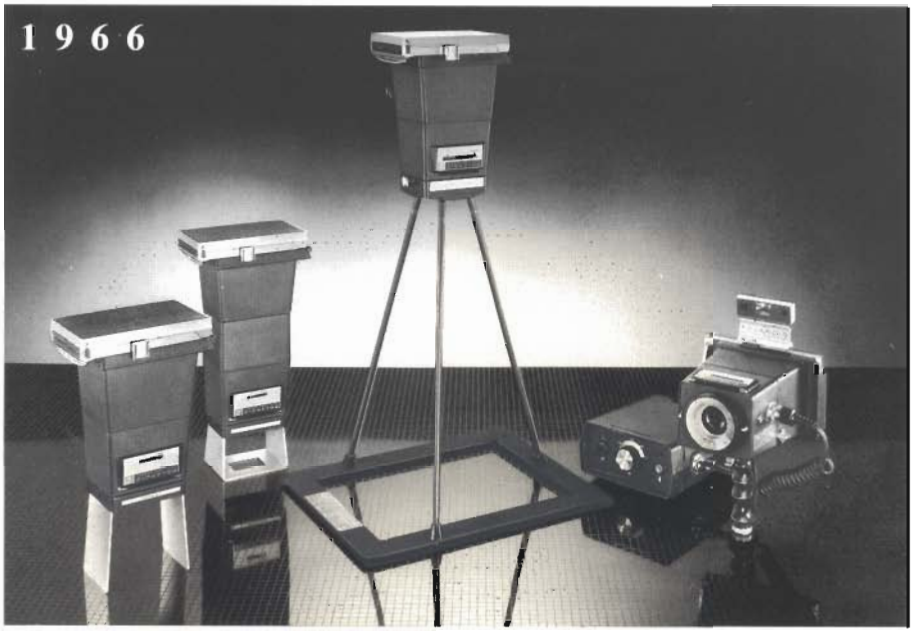
Paul Caponigro
Untitled, 1964.
Polaroid P/N 4x5 Land
Film Type 55
Polaroid Collection



Paul Caponigro
Plants, 1964
Polaroid P/N 4x5 Land
Film Type 55
Polaroid Collection

Paul Caponigro
Japanese Garden Series, 1986
Polaroid Professional Chrome
4x5 Color Reversal Film
Polaroid Collection

1966



CU-5 Framing Kits are introduced to the industry.

They increase the number of field sizes possible for close-up photography.

Polaroid TLX radiographic film, which provides finished X-rays in 45 seconds, is marketed. The X-ray may be viewed as a conventional radiograph on a light box or as a reflection print.

The **ID-2** Land Identification System premiers. The system performs photographic, die-cutting, and laminating operations and produces finished color identification cards in two minutes. The ID-2 is the first in a series of self-contained identification systems using Polaroid instant photography. Among its applications, the system will be used for drivers' license photos.

Manufacturing: Overseas production of the Swinger camera begins early in the year.

Honors: Dr. Land and Polaroid Corporation are given the Popular Science Award.

Sales: Trans World Airlines installs Polaroid **polarizing windows** in its transcontinental and overseas aircraft.

Corporation: Vickers Associates reports that Polaroid ranks fifth in dollar value held by institutional investors.

Facilities: Corporate headquarters move to Technology Square, Cambridge, Massachusetts. Five buildings are under construction in Waltham. One, a film roll production plant, is completed this year. A distribution center opens in Burlingame, California.

Personnel: Thomas Wyman is promoted to Assistant Vice President, Sales. Herbert Kassman is promoted to Secretary of the Corporation. Richard Kriebel resigns as Secretary. Donald Brown, Vice President, Patent Counsel and a member of the Board of Directors, dies.

Dr. Land is granted an honorary Doctorate of Law from Washington University. He is awarded the Albert Michelson Award from the Case Institute of Technology for his *...significant contribution to knowledge and welfare of mankind*. He is awarded the Diesal Medal in Gold from the German Association of Inventors. He is appointed a member of the Carnegie Commission on Educational Television (1966-1967) and William James Lecturer in Psychology at Harvard (1966-1967), receives an honorary Doctorate of Science from Yale University, and receives his 300th patent.

1967

Five Electric-Eye 200 Series cameras are introduced worldwide.

These cameras offer the same basic features as the 100 Series, with a different method of designating film speed. Improved shutters are added to several lower-priced cameras. The lowest priced model, the 210, retails for $50.

Type 51 film is marketed for high-contrast reproduction of line art work. Speed on Type 146L Land film is increased to 320 under daylight/electronic flash illumination, 125 under tungsten. Polaroid releases an Instant Halftone System for the MP-3 camera. It consists of four glass screens, a halftone screen holder, and a variable lens aperture attachment.

Photographer Art Kane creates *A Time to Play*. This unique three-section motion picture is part of an exhibition of American art from Expo 67. The film uses a technique in which five different cameras are used to create the integrated design of the film. Three motion picture projectors are then used to show different yet compatible scenes on separate screens.

Facilities: The corporation announces an ambitious expansion program. Construction begins on new factories on 220 acres in Norwood. Facilities for the production of cameras, film, color negatives, and chemicals begin in Waltham and New Bedford, Massachusetts.

Corporation: The Board proposes a 2-for-1 stock split, bringing the number of authorized common shares to 36 million.

Personnel: Robert Brown retires as Director. Richard Hill, President of the First National Bank of Boston, and Henry Necrasulmer, a partner of Kuhn, Loeb & Co., are elected to the Board of Directors. Arthur Barnes is promoted to Vice President, Manufacturing, and is replaced as Assistant Vice President by Louis Scott. Dr. Joseph F. Shea is appointed Vice President and Deputy Director, Engineering.

Community Relations: A broad involvement in community affairs is a hallmark of Polaroid policy. The company's policy on contributions starts with the premise of responding to community needs on the community's terms. Each year an employee committee sifts through proposals and decides how to disburse money without interference or suggestions from Land or top management. Polaroid participates in **TEST** (Teenage Employment Skills Training), a 12-week machine-shop exposure program held at Memorial Drive.

The company leases **784 Memorial Drive** to use for Engineering and Research, and the Chemical Mix Building is completed.

Dr. Land is elected to the Board of Directors of the Ford Foundation. He is bestowed an honorary degree (Doctorate of Law) by the University of Massachusetts and an honorary Doctorate of Science by Columbia University and is given the National Medal of Science by President Lyndon Johnson, the Culture Prize by the West German Photographic Society, and the Frederic Ives Medal by the Optical Society of America.

Polaroid Exposes T.E.S.T. Boys to Machine Shop Work

1968

Big Swinger Model 3000, a larger version of the Swinger, is released.

It features a new developer spread system utilizing fixed metal spreader bars instead of rollers. The camera's design allows it to accept standard Type 107 pack film.

Polaroid is a pioneer in the support of sports programming on public television and funds national coverage of the Longwood Tennis Match, the first complete tennis event broadcast on public or commercial television.

Polaroid introduces a number of additional new products:

the **M-10 camera,** for low-level aerial reconnaissance pictures; the Special Events Land camera Model 228, for producing pictures on a high-volume, continuous basis; a new Polaroid 4x5 film holder (Model 545).

Research: At the annual meeting, Dr. Land demonstrates two products under development, coaterless black and white film and instant color transparency film (which produces a finished full-color transparency on the spot), and a document copier involving a new kind of photographic paper which looks like ordinary paper.

The 20th anniversary of the introduction of the Polaroid Land camera is celebrated on November 26.

Facilities: Three plants in Waltham, Massachusetts, are completed. The company purchases 126 acres in New Bedford, Mass. The Camera Division adds operations on Henry Street and 640 Memorial Drive. Camera Repair moves from Memorial Drive to 89 Second Avenue. Machinery Engineering and Chemical Engineering Departments are consolidated into the Equipment Engineering Department.

Sales: North Carolina, Massachusetts, New Mexico, Alaska, and Virginia contract to use the ID-2 Identification System, which was introduced in 1965, for drivers' licenses.

Community Relations: Inner City Inc., a Polaroid subsidiary, is opened at 716 Columbus Avenue to give career training to the disadvantaged of the Cambridge/Boston area.

Personnel: L.Z. Morris Strauss and James P. Warburg resign from the Executive Committee. Dr. James Killian, Jr., Henry Necrasulmer and David Skinner, Directors, are elected to the Executive Committee. Dr. Carl Kaysen, Director of the Institute for Advanced Study at Princeton, is elected to the Board of Directors. Howard G. Rogers is elected Vice President and Senior Research Fellow. Louis D. Scott is elected Vice President/Manager, Film Division. Mark Sewall is elected Vice President, Manager Camera Division. Peter Wensberg is elected Vice President, Advertising. Thomas Wyman is elected Vice President, Sales.

Dr. Land receives an honorary degree (LHD) from Williams College.

The Minister of Peace Is Slain

Memphis Sniper Kills Martin Luther King

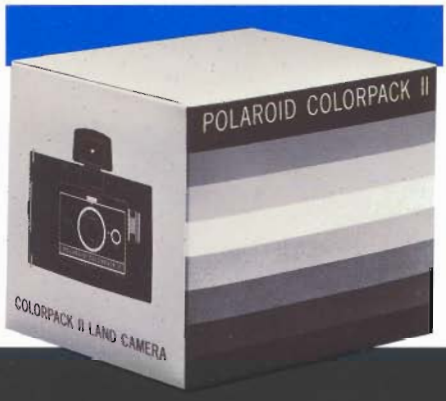
Will Bomb Cheaps Peril Talks?

Complaint's Career in Doubt

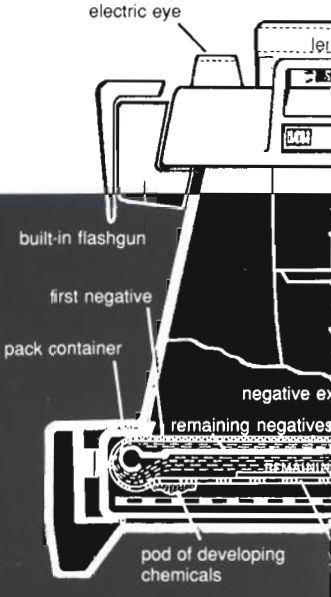
Brett Weston
Untitled, 1966
Polaroid PolaPan 4x5 Land
Film Type 52
Polaroid Collection

A formal collecting program initiates ongoing acquisition of selected prints taken with Polaroid products by sponsored photographers.
A committee of Polaroid employees is established to select the images to be included in the new collection. By 1987, this collection will consist of over 4,000 images.

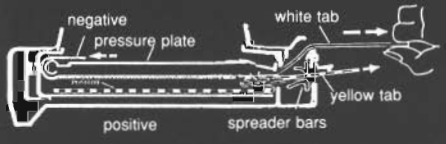
1969

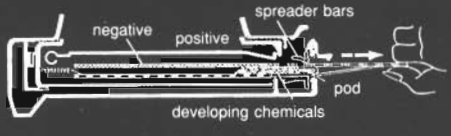


The **Colorpack II** is the first in a long line of nonfolding, plastic-bodied automatic cameras for pack film and the first low-priced camera to make both color and black and white pictures.



The Colorpack II Triplet lens: The precision-ground lens is designed with the aid of a computer to provide an extraordinary combination of optical qualities unmatched by any lens in any camera in the Colorpack price class.





These diagrams show a film pack positioned in the back of the camera. Facing the lens is a stack of 8 sheets of light-sensitive negative material. To develop a picture, the negative and positive sheets are pulled between the spreader bars. The pressure of the bars bursts the pod onto the negative and spreads jelly-like developing chemicals between both sheets to form a sandwich.

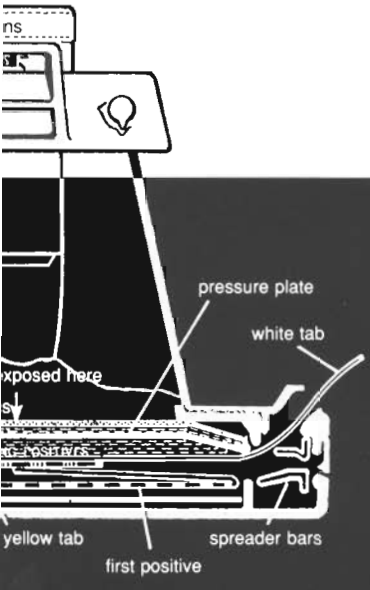
Electronics: A sensitive electronic eye and a transistorized electronic shutter form an electronic eye exposure control which produces the correct exposure in almost any lighting situation. The flashgun is built into the camera, and the user simply snaps on a flashcube. No special exposure settings are required for flash pictures. The electronic shutter measures the light and makes the exact setting during the burst of the flash.

Corporate Culture: Black employees account for 10% of Polaroid's population as compared to 7.5% in 1968.

Dr. Land is appointed a member of the President's Committee on the National Medal of Science (1969-1972).

Subsidiaries: Polaroid opens a Swedish subsidiary. Polaroid International BV and Polaroid Nederland BV are dissolved. The merchandising, accounting, and marketing functions of these institutions are assumed by Polaroid Europa.

The Polaroid Model ED-10 Land Instrument camera is introduced for educational institutions and research labs. A special adapter enables it to fit over the eyepiece of a microscope to provide a simple method of making photomicrographs. On the right is a **micrograph of crystals** taken with the ED-10 under polarized light.



Research: A 189-chemist laboratory is working on one of the toughest SX-70 projects, the search for a film opacifier. This complex chemical compound would have to be invisible during exposure, thus allowing light to strike the negative; opaque during development, protecting the image layer from light; and completely trans- parent after development, so the final color image would show through. Land assumes that Polaroid can solve the problem and designs a camera with this in mind. Hundreds of chemicals are formulated, tested, and discarded in the search for an effective opacifier. Eventually Polaroid chemists synthesize new phenolphthalein indicator dyes which become highly colored in an alkaline solution, similar to the development process of silver halide grains. This thin opaque layer lets through less than one-millionth of the light that reaches the film surface during development. Yet near the end of the development process, as alkali is captured in a polymeric acid layer and the pH of the system drops, the indicator dyes again become colorless.

Late in 1969, about 50 top Polaroid scientists gather for the debut performance of the film opacifier. Later, when the first 80 pounds of opacifier is manufactured, Dr. Land rewards the crew of inventors with a cake emblazoned with the words:

"and the darkness shall become light."

Sales: Polaroid announces June sales are the highest of any month in its history. Color film sales exceed 51 million units. Banks begin using the ID-2 Land Identification System in Master Charge and BankAmericard charge accounts.

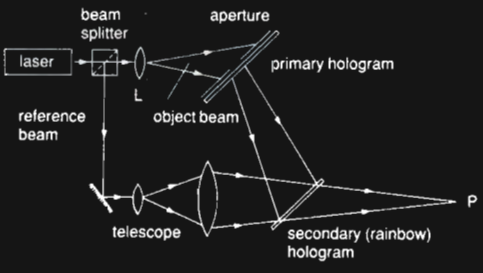
Facilities: Construction on the largest building in Polaroid's history to date, a color negative plant, is begun in New Bedford, Massachusetts. (In 1971, I.M. Booth will become Division Vice President, Color Negative, and in 1972 he will become Plant Manager of the New Bedford plant.) At the Waltham film plant, 80,000 square feet of manufacturing space is added.

Personnel: David Skinner, Vice President and General Manager, becomes Vice Chairman of the Board and Vice President. Stanford Calderwood and William McCune become Executive Vice Presidents. Arthur Barnes and Dr. Richard Young become Senior Vice Presidents. Dr. Sheldon Buckler and Dr. Robert C. Duncan are appointed Assistant Vice Presidents. James Warburg, a founding Director of the company, dies.

The Polaroid **300 Series** pack cameras are introduced.

The top-of-the-line **Model 360** Land camera represents the first incorporation of integrated circuits into a consumer product and includes an electronic flash.

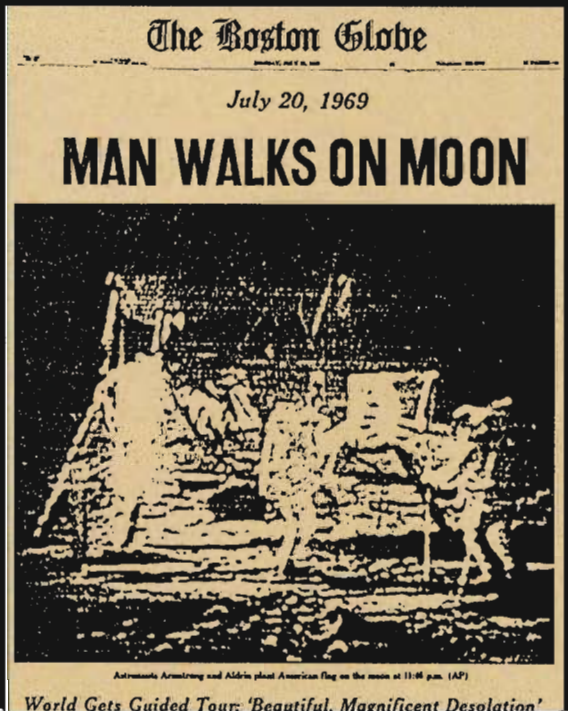
Technology: Dr. Stephen A. Benton demonstrates that white-light viewable, three-dimensional holographic images of excellent quality can be produced.



Optics: Rainbow holograms (also known as white-light or Benton holograms): The vertical information axis is used as a focused diffraction grating to disperse the light into a vertical spectrum in the viewer's space. By moving from side to side, one enjoys normal horizontal parallax; one can see behind the image by looking around it, and it appears to be three-dimensional. But as one moves up and down, the same three-dimensional image appears in a succession of spectral hues.

Thus white-light transmission holograms are dubbed *rainbow* holograms. This name is not completely accurate, because later work at Polaroid makes it possible to produce images which are either multi-colored or virtually black and white.

The optics can be varied, depending on the final effect desired. The photosensitive plate used to record holographic images is coated with a specially formulated emulsion that has a microstructure much finer than those used in photography. The object to be reproduced on the plate is placed in front of it. An exposure is made using laser light, and the plate is processed. The image from the processed plate is then projected into space and transferred to a second plate, utilizing a unique optical system that makes the second hologram viewable in white light.



The Boston Globe

July 20, 1969

MAN WALKS ON MOON

Astronauts Armstrong and Aldrin plant American flag on the moon at 11:46 p.m. (AP)

World Gets Guided Tour: 'Beautiful, Magnificent Desolation'

Net US Sales	$465,609,000
Net US Earnings	63,121,000
Net Intl Sales	70,459,000
Net Intl Earnings	8,547,000
Occupied Space	3,627,000 sq ft
Employees	9,157

1970

Coaterless black and white **film Type 20C** for the Swinger camera goes on sale.

Prints feature improved image structure and tonal range, 30-second development time, 3000 speed.

Other products include the CU-4 camera, for cathode-ray tube imaging, which is sold to manufacturers for inclusion with their products.

Colorpack III is introduced.

It is a lightweight, low-cost, color-capable camera with electronic shutter and built-in development timer (the deluxe version of Colorpack II). Colorpack III features a Triangulation-type Distance Finder. The user tips the camera forward to place a horizontal red line in the viewer over a point on the ground directly below the subject's face, presses the button on the Distance Finder, causing a pendulum to swing forward, then releases the button, locking the pendulum. The Distance Finder scale then shows the distance from the camera to the subject.

Chemistry: Unlike coater-type black and white print films, which utilize silica in the image-receiving layer, **coaterless films** employ regenerated cellulose. The silver image forms sufficiently deep within this layer to protect it from abrasion and atmospheric contamination. The reagent is of a nonstaining type, and any reagent left within the image layer is neutralized by a layer of polymeric acid just below.

At the annual shareholders meeting, Dr. Land demonstrates an instant motion picture process.

Corporate Culture: In response to concern over apartheid laws in South Africa, Polaroid discontinues sales to the South African government and asks Polaroid distributors in the country to increase the salaries of black employees. Polaroid initiates the first daycare voucher program in the US. One hundred workers are laid off due to reduced production schedules, but all except seven are contacted to return to work later on.

Manufacturing: Polaroid makes plans to manufacture its new instant color film and color transparency in-house.

Subsidiaries: Polaroid opens overseas subsidiaries in Norway, Austria, and the Caribbean.

Environment: The "Polaroid and the Environment Committee" is formed to study the impact of Polaroid operations and products on the environment.

Personnel: Frank Lord, Treasurer, retires; Harvey Thayer is named to replace him. Stanford Calderwood resigns as Executive Vice President. Vice Presidents Charles Mikulka, Peter Wensberg, and Thomas Wyman are appointed to the Management Executive Committee.

Dr. Land receives the Cosmos Club Award and is awarded an honorary Doctorate of Science from Loyola University.

The Boston Globe

Guardsmen Kill 4 Students in Ohio; Cambodia Spurs Campus Upheaval

1971

Miniportrait Land cameras,

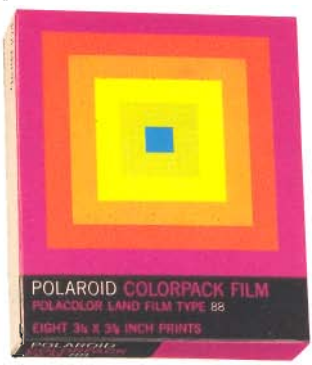
which produce multiple black and white or color identification pictures using Polaroid pack or 4x5 film, are manufactured and introduced overseas. The cameras are used for passport photography and many types of document photography.

The 400 Series Focused Flash cameras are marketed. The four new models use a new type of flash exposure system utilizing G.E. Hi-Power flashcubes or equivalent in a Polaroid **Focused Flash unit** coupled to the range-finder. By plugging in the flash unit, the shutter is automatically set to a single constant speed. As the camera is focused, vertically moving louvers in front of the flashcube automatically open or close to provide the correct exposure. The flash range is from 3.5 to 10 feet.

The **Big Shot** camera debuts.

Designed to make only flash color portraits of one or two people at a preset distance, the Big Shot Land camera is focused by moving back and forth until two images of the subject coincide in one distance rangefinder/viewfinder. It is available from 1971 to 1973.

Other cameras for professional use include the Model 701, Model 703, Model 704, and Model 706. Polaroid sells the CU-5 4x5 camera system for medical and law enforcement applications.



The 80 Series pack films, **Type 87** coaterless black and white film and Polacolor Type 88 film, are marketed for use in new *square format* compact plastic-bodied cameras, which are similar to the Colorpack family except for size.

Environment: Based on findings from the "Polaroid and the Environment Committee," Polaroid expands and improves programs for the reduction, salvage, and recycling of solid waste generated by its manufacturing operations. The company uses recycled paper in the production of instruction materials, intracompany communications, reports to shareholders, and office supplies. A second thermal oxidizer is put into operation in Waltham. A massive liquid treatment plant in New Bedford is planned for operation in 1972.

Subsidiaries: Polaroid incorporates subsidiaries in Panama and Hong Kong.

Dr. Land receives the Photographic Science and Engineering Journal Award.

Personnel: I.M. Booth is elected Division Vice President, Color Negative Manufacturing. David W. Skinner retires from the company after 27 years of service. Senior Vice President and General Manager, Arthur Barnes retires from the company after 30 years of service. Vice President Mark Sewall retires from the company after 20 years. Peter Wensberg and Thomas Wyman are named Senior Vice Presidents. Mr. Wyman is also made General Manager. Treasurer Harvey H. Thayer is made Vice President and Treasurer. Christopher C. Ingraham and Murray Swindell become Assitant Vice Presidents.

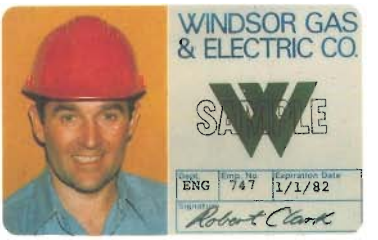
Honors: Polaroid receives a citation from the President's Committee on the Employment of the Handicapped.

Net US Sales	$414,713,000
Net Intl Sales	110,794,000
Net Earnings	61,018,000
Employees	11,654
Patents	1,238

The **Square Shooter**

and the Super Colorpack are introduced. The Square Shooter is the first camera sold in the US for use with the square format films. It produces instant color pictures at about the same cost as conventional color snapshots processed by the manufacturer. The Zip Land camera, the international version of the Big Swinger, which uses only black and white film, is introduced in international markets.

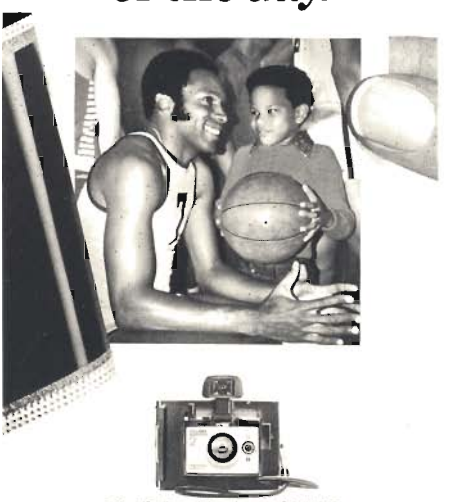
A miniroller developer spread system is incorporated into low-priced, plastic body cameras, providing a lightweight, simplified version of the steel roller developer spread system used in folding pack cameras. It also replaces and is interchangeable with the fixed bar spread system used in early versions of rigid body plastic pack cameras.



The **ID-3** Land Identification System is introduced.

The ID-3 is marketed internationally at about half the price of the ID-2 system. The Polaroid ID system simultaneously photographs the subject and the data card. The resulting composite picture is completely developed in 60 seconds. Several variations of the system, which produces high-volume integral ID cards in color, are available for banks, schools and colleges, and industrial firms.

The best minute of the day.



The Polaroid minute.™ 24.95

The Polaroid Foundation Is Established

The foundation makes charitable gifts and contributions. The corporation's basic approach to arts sponsorship has been one of quiet support: aiding artists with gifts of materials, equipment, and studio time, in exchange for works that are incorporated into the Polaroid Collection. The corporation and the foundation also underwrite symposia, support noteworthy publications through advertising, and give grants to institutions with an active interest in collecting contemporary photography.

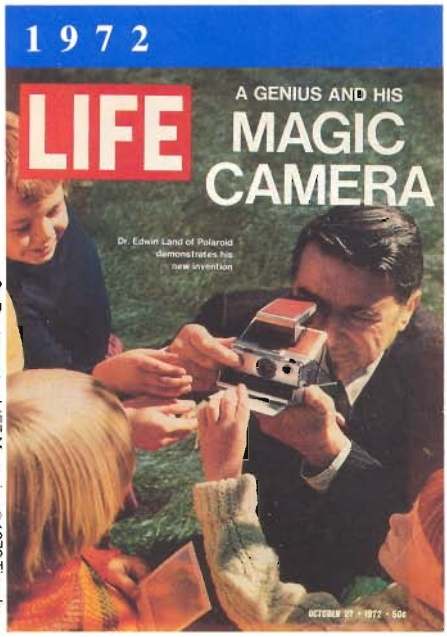
Polaroid Encourages Employee Growth

Carrying on Land's conviction that every company must *make a worthwhile worklife for every member of the company*, Polaroid makes a major revision in the hourly wage plan. The company develops a job *family* concept which provides more clearly defined opportunities for employee growth. Polaroid conducts an experimental program to improve the salaries and benefits of its distributors' black employees in South Africa. The company also opens a major new medical clinic in Cambridge for employees.

The Boston Globe

Secret Pentagon Documents bare JFK role in Vietnam war

Ellsberg promises statement soon on role



Co Rentmeester, LIFE Magazine © 1972 Time Inc.

The revolutionary **SX-70** system realizes Dr. Land's concept of absolute one-step photography.

The official unveiling takes place at the annual stockholders meeting. February 21 marks the 25th anniversary of Dr. Land's first demonstration of instant photography.

Continued improvements in camera design, optics, and electronics result in the introduction of the Square Shooter 2, the Good Time camera. It is the lowest priced all-purpose color camera Polaroid has ever marketed and uses square-format Type 88 color pack film. The CR-9 camera for CRT recording is also introduced this year.

Optics: Difficulties in finding a good spot for the viewfinder lead to the design of an unusual single lens reflex (SLR) viewer. This reflex viewing system employs a mirror-folded light path through the camera rather than the bulky pentaprism of conventional single lens reflex cameras. Only the front element moves (less than $\frac{1}{4}$ inch), yet it can focus as close as 10.4 inches and as far as infinity.

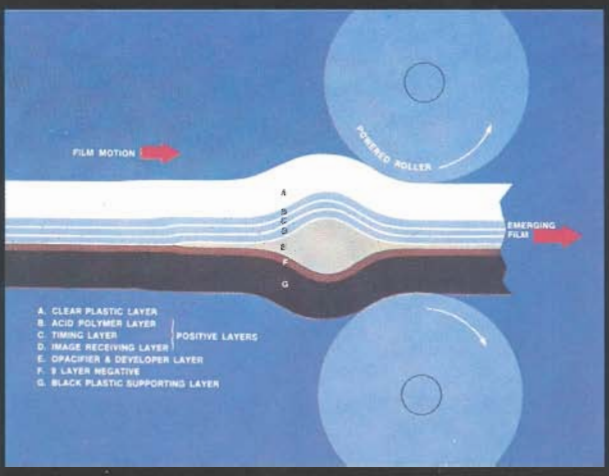
Dr. Land presents a technical paper on the revolutionary SX-70 camera and film system at a meeting of the Society of Photographic Scientists and Engineers in San Francisco. Land receives the Founders Medal from the National Academy of Engineering and is awarded Honorary Membership in the Optical Society of America.

Corporate Culture: Major improvements are made to the Incentive Compensation Plan and the Retirement Program, including the addition of a pension plan and amendment of the profit sharing retirement plan. Retiree life insurance coverage is increased. Minorities constitute 11.5% of domestic personnel and 6.5% of salaried employees.

Community Relations: Polaroid is deeply involved in the area of prison reform. Not only does the company help rewrite archaic corrections laws and push them through the Massachusetts legislature, but the company continues to hire and train men and women who have been previously imprisoned.

The SX-70: New concepts in camera and film interaction lead to the design of the first fully automatic, motorized folding single lens reflex camera which ejects self-developing, self-timing color prints.

Electronics: Digital logic functions incorporated into the SX-70's operations circuits automate all the controls necessary to take a picture except the focusing function. A fresh battery is contained in each new pack of film and eliminates the need for battery replacement or recharging.



Chemistry: The above diagram shows how instant darkness is spread between the positive and negative structures of SX-70 film. The self-developing, self-timing film is an integral picture unit with opacifying dyes that function as a chemical darkroom, allowing the picture to develop in the light, thus enabling the viewer to watch the picture develop. The film emerges hard and dry from the camera directly into the light, where a visible image begins developing 1½ seconds after the exposure is made. The picture is completely developed in a few minutes.

The Arts: Noted filmmaker and designer Charles Eames writes, directs, and photographs an 11-minute film to introduce Polaroid's SX-70 photographic system. The music is written by Elmer Bernstein, the script by Dr. Philip Morrison, Profesor of Physics.

Environment: A liquid treatment plan at the New Bedford negative plant makes liquid wastes safe for discharge into the sewer system, as well as reclaiming valuable substances.

Sir Laurence Olivier becomes the spokesman for Polaroid's SX-70 camera in a series of television, radio and print advertisements. He has never appeared in advertising of any kind before.

Manufacturing: Polaroid works with Corning Glass, General Electric, Fairchild Camera (electronics), Texas Instruments (electronics), Du Pont and E.S.B (battery) to supply components for the SX-70. Polaroid begins to assemble its own cameras for the first time and also starts to manufacture its own color negatives. Fine chemicals for the company's film products are synthesized at Polaroid's Perkin Division.

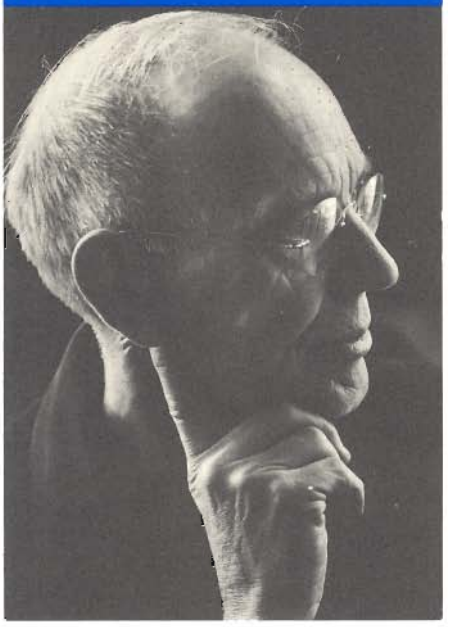
Subsidiaries: Polaroid A.S. Denmark is formed as well as two subsidiaries in the Netherlands.

Personnel: I.M. Booth becomes Plant Manager at New Bedford. Louis Scott, Vice President, and Herbert Kassman, Secretary, resign. Dr. Stanley Bloom and George Frenald, Jr., are appointed Assistant Vice Presidents. Richard DeLima is appointed Secretary and Lutz Alt is made Assistant Treasurer. Dr. Sheldon Buckler is appointed Vice President. He and Harvey Thayer are named members of the Management Executive Committee.

Net US Sales.....$417,478,000
Net Intl Sales.....141,810,000
Net Earnings.....42,534,000
Employees.....11,998

The Boston Globe
Era of peace' is at hand, Nixon says

1973



Ansel Adams
Portrait of Clarence Kennedy, Northhampton, Massachusetts, 1959
Polaroid Corporate Archives

The Clarence Kennedy Gallery is established.

The gallery is named in honor of Clarence Kennedy, professor of the history of architecture, sculpture, and Italian Renaissance painting and former Director of the art history department at Smith College. The gallery serves as a showcase for the work of emerging and professional photographers using Polaroid products.

Polaroid underwrites *Nova*, critically acclaimed television programming which brings science programs to the public. *Nova* subsequently becomes America's most popular, longest running, and most-watched ongoing weekly series on public television.

The MP-4 technical camera replaces the older MP-3. The new camera provides an assortment of accessory and configuration options for maximum versatility in document copying, photomacrography, photomicrography, etc. It accepts all Polaroid pack films, 4 x 5 films, and roll films. The Model 707 Instant ID System, a low-priced version of the Polaroid ID-3 premiers.

Corporate Culture: Polaroid institutes the Women's Action Plan for the equal representation of women at all levels of the company. Blacks constitute 16.7% of the hourly worker population and 7.2% of the salaried population.

Technology: An experimental polarized headlight system from Polaroid is tested by *Road & Track* magazine, which states that *we are most impressed on a theoretical level with the polarized system and think that polarization offers the best long-term solution.* (*Road & Track, May 1973*) However, polarized headlights are not instituted by any automobile manufacturer.

Manufacturing: SX-70 cameras are assembled at a rate of 5,000 a day and SX-70 film at a rate of 50,000 packs a day.

Subsidiaries: New subsidiaries open in New Zealand and Brazil.

Sales: The Square Shooter 2, Polaroid's economy camera, is the best-selling camera in the US during the November to December retail season.

Personnel: Frank Jones, Ford Professor of Urban Affairs at MIT, is elected to fill the new seat on the Board of Directors, Theodore Voss is appointed Assistant Vice President.

Honors: For community affairs work in the Cambridge and New Bedford areas, Polaroid receives *Business Week's* 1973 Business Citizenship Award for Human Resources.

Dr. Land receives the University of Miami Award for Distinguished Contribution to Communication Arts; the Karl Fairbanks Memorial Award; the Kosar Memorial Award; the Perkin Medal from the American Section of the Society of Chemical Industry; and an Honorary Doctorate of Science from New York University.

Net US Sales	$493,089,000
Net Intl Sales	192,447,000
Net Earnings	51,818,000
Employees	14,277

World Events

An energy crisis grips the world, and an oil embargo by Arab nations exacerbates the problem.

The Yom Kippur War is the fourth and most fierce Arab-Israeli war since 1948.

Bobby Riggs loses to Billie Jean King in the "Battle of the Sexes" tennis match.

The Supreme Court rules that abortion should be a decision between a woman and her physician.

The Boston Globe

Former President Johnson dies at 64

1974

Polaroid estimates that well over a billion instant prints will be made this year, about 65% of them being made in color.

Improvements in earlier positive/negative (Type 55 P/N) films lead to Type 105 P/N black and white film, which produces both a print and a negative and is introduced for use in cameras or camera backs accepting film. The company also releases a pack camera for advanced amateurs and professionals, the Model 195 Land camera, which features manually controllable settings, an F/3.8 Tominon 4-element lens , a Seiko shutter, flash synchronization, and a 10-second exposure delay. The Model 195 Land camera is similar to the Model 190 but features an automatic electronic development timer.

A new flash exposure system in the SX-70 compensates for minor focusing inaccuracies. Other products include the SX-70 Model 2 Land camera, a less-expensive version of the Deluxe SX-70; PolaPress, an I.D. laminating system and dye cutter, which combines embossing and a magnetic strip with a color photo; the Model 405 pack film holder for adapting most 4x5 cameras to pack film; a portable negative clearing tank; CB101 camera back and several Miniportrait cameras, which are released to the international market.

Corporate Culture: Polaroid becomes a leader in innovative, continuing, unconventional social action. In addition to programs benefitting employees, the company continues a long-standing tradition of employing substantial numbers of minorities and training them for managerial positions. Black employees constitute 14.2% of hourly workers and 6.3% of the salaried population. Women comprise 37.5% of hourly employees and 8.6% of the salaried population.

Subsidiaries: A second Panamanian subsidiary, Polaroid Intercontinental S.A., is formed.

Personnel: David W. Skinner, former Vice Chairman of the Board of Directors and former Vice President and General Manger of the company, dies. He had served for 27 years before his retirement in 1972.

Manufacturing: Polaroid begins manufacturing its own four-element lenses for the SX-70. Battery assembly begins at Polaroid's pilot facility in Waltham, Massachusetts. In all its manufacturing endeavors, Polaroid insists: *our machine designers...make machines that work for people rather than machines that employ people for repetitive manual operations.*

Environment: A company-wide conservation program instituted in 1973 results in energy savings of 20% or more in many facilities.

Dr. Land is awarded the Vermilye Medal by the Franklin Institute, Philadelphia.

Net US Sales.....$487,300,000
Net Intl Sales.....270,000,000
Net Earnings.....28,400,000
Employees.....13,019

The Boston Globe
Cease-fire begins 7 p.m. Saturday; Nixon claims 'peace with honor'
The Boston Globe
Panel votes for Nixon impeachment on obstruction of justice, 27 to 11
The Boston Globe
Impeachment debate begins

1975

The **Special Events 2 Land camera** is marketed for high-volume promotional photography, using Polacolor 2 film (Type 108).

Polaroid begins marketing Polacolor 2 film (Type 108).

It is the first peel-apart color film that uses a color negative manufactured by Polaroid (Polaroid has made color negatives for integral SX-70 film since its introduction in 1972). This brilliant, completely new film is made with the same metallized dyes used in SX-70 and features a new color negative and positive sheet and anticurl photographic paper.

Miniportrait cameras are marketed in the US, principally for passport photographs.

New products include Super Shooter Land camera, Super Shooter Plus Land camera, SX-70 Executive Land camera, SX-70 Model 2 Executive Land camera, Electric Zip Land camera. Products released in international markets include the Model 455 Land camera, SX-70 Model 2 Executive Land camera, Model 195 Land Camera, SX-70 Model 3 Land camera, the Clincher Land camera, Model 355 Land camera, the Color Swinger and the Color Swinger II Land cameras and the Colorpack 100 Land camera.

Facilities: The corporation establishes the International Polaroid Collection in **Offenbach, Germany.**

Corporation: Polaroid commences a suit against Berkey Photo, Inc., on charges of patent infringement by a Berkey instant-picture camera which would use SX-70 film.

Subsidiaries: Polaroid consolidates its regional marketing headquarters for Europe in Amsterdam, the Netherlands. The company incorporates a subsidiary in Singapore and a second subsidiary in Brazil. Polint Management Services Corporation is also formed.

Corporate Culture: Blacks represent 15% of hourly employees and 6% of salaried employees. Women represent 38% of hourly employees and 9% of salaried employees.

Sales: The US Passport Office officially certifies Polaroid Type 58 4x5 color film for use in passports. Italy and Austria are the first European nations to institute Polaroid photographic bank card programs.

Environment: Company consumption of electricity decreases 10%, fuel consumption 5%, and water use 10%.

It's like opening a present.

Polaroid Color Pack Cameras start at under $60.

The advertising firm of Doyle Dane Bernbach prepares this ad for the **Colorpack 100 Land camera.**

Candace Bergen appears in television commercials to launch the SX-70 Model 3 Land camera.

Manufacturing: The company ends its 40-year old licensing agreement with American Optical Company for Polaroid polarizing sunglasses and then introduces its own sunglass line in Florida and California. Production of SX-70 film for Polaroid's international markets begins in the Netherlands.

Dr. Land resigns as President of the company on February 18, 1975. He continues as Chairman of the Board of Directors, Chief Executive Officer, and Director of Research. Dr. Land is made an honorary member of the Royal Institution of Great Britain and of the Society of Photographic Science and Technology of Japan. He also receives the ASMP Technical Achievement Award.

Personnel: William McCune is elected President and Chief Operating Officer. He is also elected a Director and member of the Executive Committee of the Board. I.M. Booth is elected Assistant Vice President. Charles Mikulka is elected Senior Vice President. Dr. Sheldon Buckler is made Group Vice President, Color Transparency, Chemical Manufacture and Battery programs. Howard Rogers, Vice President and Senior Research Fellow, is elected Associate Director, Research. Dr. Stanley Bloom is elected Vice President and becomes Associate Director, Research. Richard de Lima (Secretary), Robert Duncan (Engineering), George Fernald, Jr. (Film Division), Christopher Ingraham (Camera Division), Murray Swindell (Sales and Distribution), and Theodore Voss (Advertising) are elected Vice Presidents. Lutz Alt (International), Robert Delahunt (Film Division), Dr. Derek Jarrett (International), Joseph McLaughlin (International), and Harold Page (Personnel) are elected Assistant Vice Presidents. Edward Bedrosian is elected Assistant Treasurer.

Polaroid Introduces Low-Priced Camera And a Color Film

* * *

Super Shooter, Polacolor 2 Are Said to Produce Prints Comparable to the SX-70's

By a WALL STREET JOURNAL Staff Reporter

BOSTON — Polaroid Corp. introduced a low-priced camera and a color film that it says produce peel-apart color prints that are comparable in sharpness and brilliance to its dry SX-70 pictures.

The new camera, called the Super Shooter, goes on sale in mid-March at a suggested list price of $25. It focuses from 3.5 feet to infinity and uses the new color film as well as five other peel-apart color and black-and-white pack films Polaroid sells. The Super Shooter automatically adjusts to take either rectangular, three-inch-by-four-inch format film or the smaller, lower-priced square format types.

The new film, called Polacolor 2, has a suggested list price of $5.49 for a pack of eight exposures. It also goes on sale in mid-March. The price is 50 cents a pack higher than the current type 108 color film, which Polaroid introduced in 1963.

Polaroid executives said Polacolor 2 uses chemicals, dyes and coating technology that came out of development of its SX-70 film, which produces dry prints. The peel-apart Polacolor 2 prints are sharper and have more brilliant colors than other Color Pack film, and have much less tendency to curl, Polaroid executives said. They said tests under arc lights and fluorescent lights indicate Polacolor 2 prints are far more fade resistant than conventional commercial color prints.

The film is also less sensitive to overdevelopment and to temperature changes than previous Polaroid Color Pack films, they said, which means amateurs can get better results on hot days and on prints that aren't immediately peeled apart after the recommended 60-second development time.

Polacolor 2 is made entirely by Polaroid. The original Polacolor uses negatives made by Eastman Kodak Co. under a contract that expires at the end of 1975. Hence, Polaroid will market both versions of the film throughout this year and into next year until supplies of the Kodak-made negatives are exhausted.

The new Polacolor 2 film pack fits all of Polaroid's three-inch-by-four-inch Color Pack cameras and also its film holders for cameras used in professional, scientific and diagnostic work.

Polaroid also introduced a "special events" camera for commercial uses such as identification photos and department store Santa Claus photos. The camera, built into a suitcase with electronic flash attached, will sell for about $1,000, Polaroid executives said.

The company plans to spend $12 million advertising the Super Shooter, Polacolor 2 and SX-70 products in a spring and summer marketing campaign beginning the week before Easter.

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1976

The inexpensive Pronto! camera is introduced.

In a series of television advertisements Alan Alda presents the nonfolding, lightweight, viewfinder camera. The Pronto! uses SX-70 film and features a distance scale on the lens ring and an automatic electronic exposure setting. This Galilean-type viewfinder features set-distance focusing from 3 feet to infinity. SX-70 film is improved for temperature latitude of 45 to 95 degrees Fahrenheit, with more brilliant colors and a nonreflective coating. The SX-70 camera is also improved to inhibit the flash when the film pack is empty and to inhibit picture taking when there are no fresh flash bulbs.

Polaroid debuts Polacolor 2 Land film (**Type 88**), a square-format film. Professional format Type 58 Land color film is also converted to Polacolor 2 emulsion. The Miniportrait Land camera is manufactured for Polaroid by Mamiya. Type 107C-667 Coaterless Land film is introduced for medical/industrial applications.

The EE-Series of Colorpack Land cameras and the Super Color Swinger III are released internationally. The Superclincher Land camera and the Clincher 2 Land camera are produced for special markets.

In Just Seconds, the first outside exhibition of Polaroid instant photography, is curated for the International Center of Photography in New York City.

Engineering: The three-blade sliding shutter of the Pronto! automatically adjusts over an exposure range from one second to $\frac{1}{125}$ second with automatic aperture adjustments from f/9.4 to f/22. The shutter design is similar to the SX-70 two-blade sliding aperture shutter system, but the aperture and movement of the blades have been recomputed, and a third blade is added (the SX-70's mirror serves this function). Pronto! leads to the 1977 introduction of the fixed-focus OneStep Land camera.

Electronics: Pronto! automatically combines the proper amount of flash and ambient illumination to provide uniform lighting. An electronic control also ensures the camera will not operate when the film pack is empty. A silicon diode photocell coupled to three integrated circuits controls the exposure.

At the company's annual meeting, Dr. Land shows Polacolor 2 film in new, experimental large formats to take one-step, high-quality color pictures ranging in size from 18x24cm to 60x90cm.

Environment: Programs include computerized car pooling and van pooling for employees, and supplying waste paper and plastics to schools and institutions for creative craft work.

Manufacturing: Production begins on Tele/1.5 telephoto lens for the SX-70 series. Polaroid now manufactures all of its own color negative materials. Polaroid's first international camera manufacturing operation starts in Scotland with the production of Colorpack cameras.

Corporation: In April Polaroid files suit against Eastman Kodak Company for patent infringement by Kodak's sale and manufacture of instant cameras. In 1986 a federal appeals court in Washington, DC, will uphold a district court ruling that Eastman Kodak Company violated patent rights held by Polaroid Corporation.

Brett Weston
Untitled, 1966
Polaroid PolaPan 4x5 Land
Film Type 52
Polaroid Collection

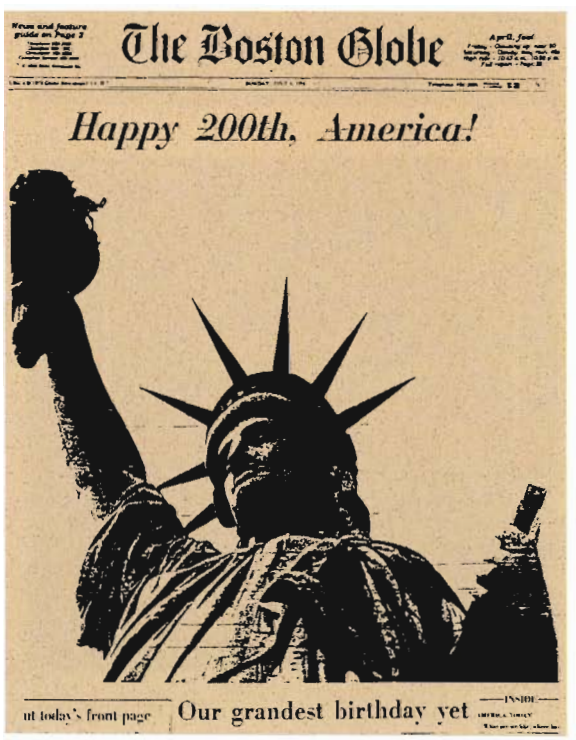
Corporate Culture: Polaroid's experimental daycare program becomes a permanent service. Black members represent 16% of the hourly workers and 6% of the salaried population. Women fill 39% of the hourly ranks and 11% of salaried employees.

Sales of Land Cameras exceeds 6 million units.

Honors: Polaroid receives 19 **awards** from state and federal energy departments for lighting and thermal reductions of over 30%.

Personnel: I.M. Booth is elected Vice President and Assistant to President. Gerald Dicker is elected Assistant Secretary.

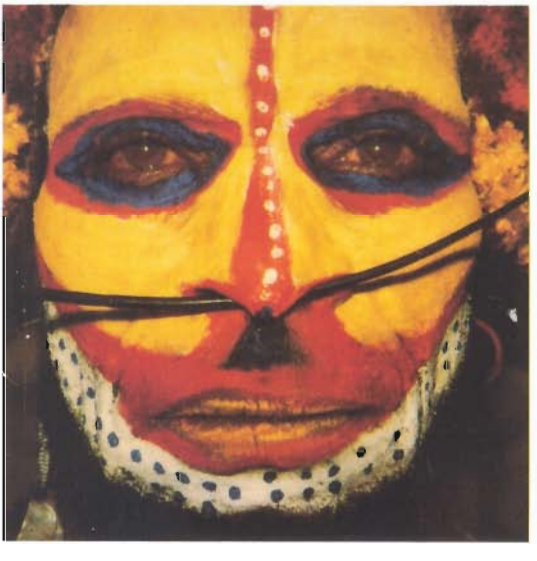
Dr. Land receives the Frederic Ives Medal of the American Optical Society and the Lieven-Gevaert Medal. Land writes in the 1976 annual report, *It is gratifying...to find that with the ever-increasing simplicity of our cameras combined with the present characteristics of the film, the population of aesthetically competent photographers is expanding rapidly.*


The Boston Globe

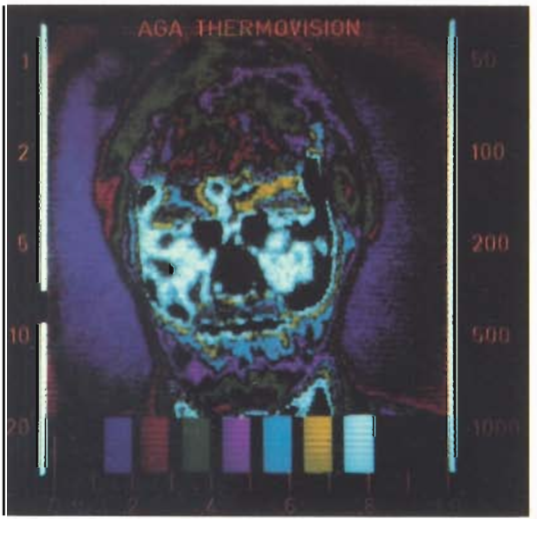
Happy 200th, America!

Our grandest birthday yet

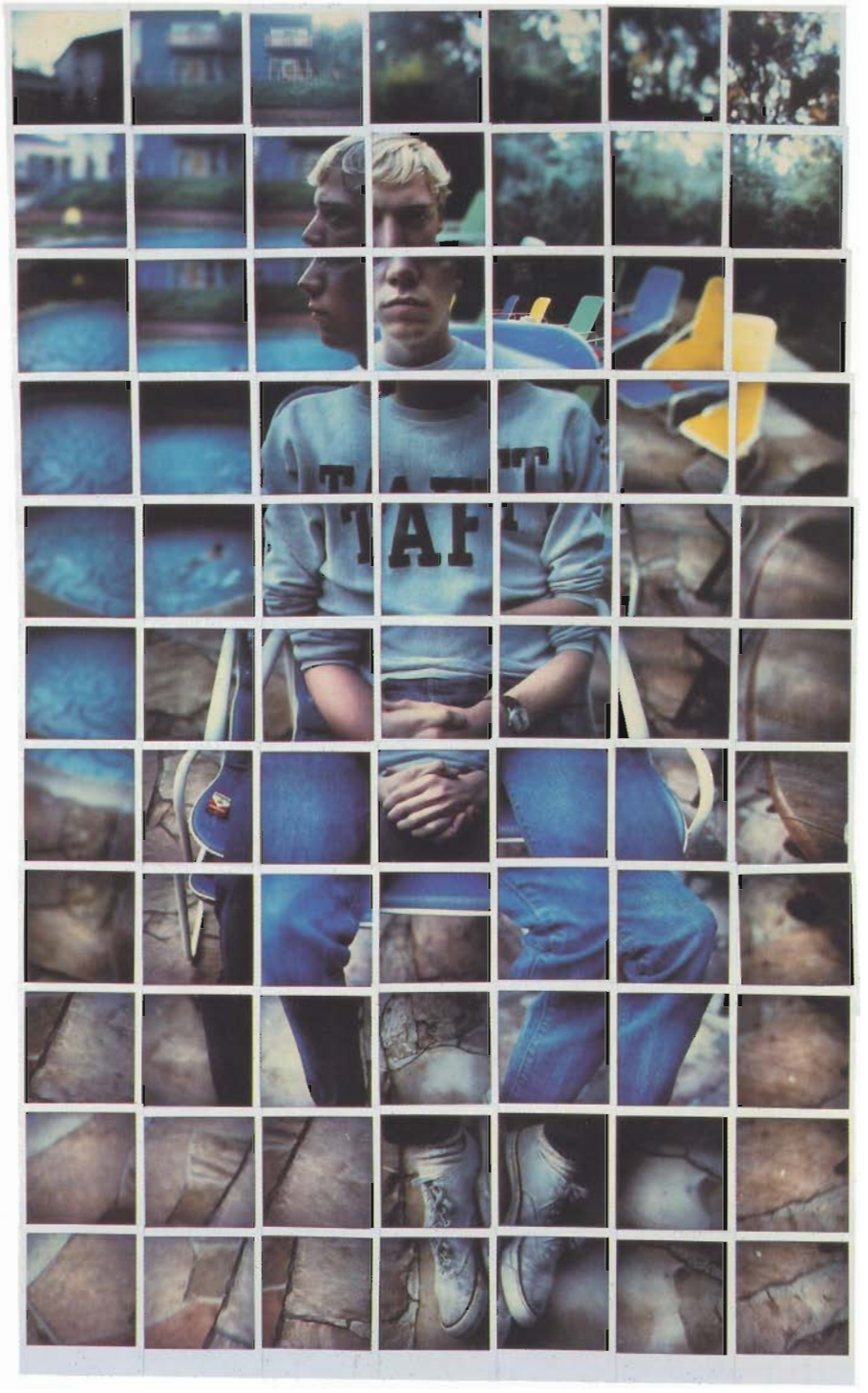
Lucas Samaras
Untitled, 1974
Polaroid Time-Zero Supercolor
SX-70 Land Film
Polaroid Collection



Malcolm S. Kirk
Papua, New Guinea Huli Tribesman Named Harinda from Henganda Village, Tari Area, 1976
Polaroid Time-Zero Supercolor
SX-70 Land Film
Polaroid Collection

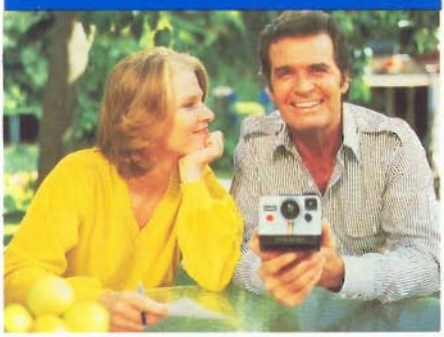


Aga thermovision of face, 1980
Polacolor ER Type 669
Polaroid Corporate Archives



© **David Hockney**
Ian Falconer, L.A., 5th March 1982
Composite Polaroid

1977



The **OneStep Land camera** is introduced.

This inexpensive fixed-focus camera becomes the best selling-camera in the US—instant or conventional—for over 4 years. **Mariette Hartley and James Garner** star in Polaroid television and print ads.

Engineering: The **OneStep camera** features a single-element, plastic lens, 103mm, f/14.6 prefocused to give sharp pictures from four feet to infinity. An electric eye controls the automatically variable aperture and shutter speed. Electronic circuitry ensures the flash will not fire if the camera is out of film.

Polaroid provides funding to launch *World*, a multi-award-winning series of international documentaries. Grants from Polaroid and others enable WGBH-TV to resume production of *The Advocates*, an acclaimed public affairs series previously on extended hiatus.

Polaroid releases a number of products internationally including the Model 1500 Land camera, Model 3000 land camera, Polatronic Flash, EE38, EE58 and EE100 Land cameras, Colorpack 200 Land camera, and the Model 1000 Land camera.

The company introduces several products domestically: the Reporter Land camera and Reporter SE Land camera, a series of enhanced Pronto! cameras, Encore! Land Camera (a special-markets version of Pronto!), a series of Minute Maker Land cameras, a professional pack film line, Type **665 P/N** black and white film, Type 668 Polacolor 2 Land film (a professional version of Type 108 Polacolor 2), and Type 084 black and white Land film (a professional version of Type 107 often used for CRT image recording). Polacolor 2 Land film (Type 808), Film Holder Model 81-05, and Automatic Processor Model 81-02/81-01 are also released this year. SX-70 Alpha 1 debuts with *fill-flash* for poor lighting conditions and a system for recognizing when the flashbar is used up.

The Face Place, an offshoot of the Special Events camera sold in 1975, is an automatic picture-taking booth. This self-contained self-portrait vending booth will be installed in shopping malls and arcades.

SX-70 Type 708 Land film is used in the Face Place Automatic Portrait Studio. This film is similar to SX-70 film, except there is no battery.

Technology: Dr. Land demonstrates Polavision, Polaroid's revolutionary system for instant movies. Land writes: *We were led to wonder what would happen if we brought to the field of living images the same kind of concern for the photographer that we had brought to the field of still images. What would it be like to go almost directly from looking at the people around us to looking at the living images of them?*

Sales: Polaroid sales exceed $1 billion for the first time.

Manufacturing: The company expands its chemical manufacturing capabilities with the purchase of a facility in Freetown, Massachusetts, which is converted for Polaroid's Perkin Division.

Corporate Culture: At the company's US facilities, 14% of all employees are black, and 31% are women.

Personnel: Stanley Bloom, Sheldon Buckler and I.M. Booth are elected Senior Vice Presidents. Lutz Alt is elected Vice President, International. Milton Dietz is elected Vice President, Engineering. Harvey Thayer is elected Treasurer and Vice President, Finance. Peter Kliem (Research), Hugh MacKenzie (Engineering), and Richard Wareharm (Senior Engineering Fellow) are made Assistant Vice Presidents.

Interest in large-scale photography for producing **art reproductions** grows.

Polaroid introduces the 20 x 24-inch camera; the prototype camera weighs 800 pounds. Because of its unwieldy size and weight, the subject has to be raised and lowered in front of the camera to change the composition of the photograph. The camera produces color 20x24-inch photographs in 60 seconds. By the 1980's improvements to the camera reduce its weight to 200 pounds and add swings, tilts, and rising fronts.

In cooperation with the Boston Museum of Fine Arts, Polaroid constructs a 50x60-cm camera plus another room-sized camera. The cameras make replications of paintings, frescoes, and other works of art too delicate or too large to be reproduced accurately by traditional methods. Exhibition of *A Medieval Tapestry in Sharp Focus* is the result of this early cooperative effort. Further improvements make large-format photography available to an even wider spectrum of users. The revolutionary large-format 8x10 photographic system provides professional quality, full-color 8x10 inch prints in instant picture format.

Polaroid stops So. Africa sales

BOSTON (AP) — Polaroid Corp. has cut off shipments of its products to South Africa, after learning that secret sales were made to the South African government by its independent distributor, it was reported today.

The Cambridge-based camera and film company moved to halt sale of its products in racially segregated South Africa after the Boston Globe disclosed sale of its products to the government.

The move made Polaroid the first American company to pull out of South Africa completely, the Globe reported. The firm does not plan to establish another distributorship in South Africa.

Polaroid and its distributor, Frank & Hirsch, agreed in 1971 that there would be no further sales to the government as a result of a furor over the use of Polaroid film in identity passbooks required for black Africans. The passbooks are considered to be a major symbol of racial oppression in South Africa, the newspaper said.

A former Frank & Hirsch employee had told the Globe that Polaroid products were shipped to a military headquarters near Pretoria and to several government bureaus.

Polaroid operates a facility at New Bedford Industrial Park.

Robert Palmer, head of community relations for Polaroid, described the company's management as "distressed. We've been wrenched. People are upset, disappointed."

Reprinted courtesy of *The Boston Globe*

Our intuition, some twenty years ago, was that it would be a deeply satisfying experience. Polavision will be marketed nationally in 1978.

Dr. Land is awarded his 500th patent at the US Patent Office and is inducted into the National Inventors Hall of Fame. He is also awarded a Management Award Medal by the Art Directors' Guild for distinguished achievement in the field of visual expression. He is awarded a Masters of Photography degree by the Professional Photographers of America, Honorary Membership by the French Society of Photography, and the New England Award for Engineering.

1978 Research into sonar technology, initiated in 1963, results in the **Sonar Autofocus system** for the SX-70 and Pronto! cameras.

The SX-70 Sonar OneStep Land camera automatically and precisely focuses in any lighting conditions by means of an ultrasonic echoing device. It also features previewing capabilities. Pronto! is similar but without previewing capabilities. The camera's transducer sets the stage for the entire process, measuring the distance to the subject by calculating the amount of time it takes sound waves to reach the subject and return.

Polaroid television commercials featuring the wry humor of James Garner and Mariette Hartley win several awards.

POLAROID INTRODUCES

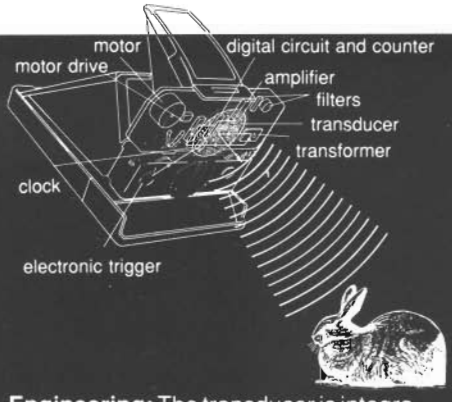
INSTA

THE SECOND REVOLUTION IN P

MOV

Polavision, a new instant color motion picture system, makes $2\frac{1}{2}$-minute films in self-developing cassettes.

The system includes a camera, a self-developing film called Phototape, and a Player.



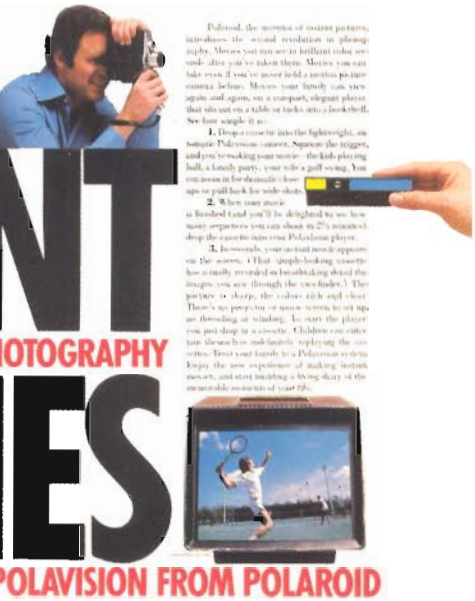
Engineering: The transducer is integrated with the camera's electronic circuitry. As the shutter button is pressed, the lens automatically moves to the correct position for accurate focus and exposure. **Sonar Autofocus** is more accurate than any known technique, such as contrast differences of optical means. The ultrasonic transducer developed by Polaroid represents an unusual accomplishment in engineering. It has been designed to provide a piston action for the outgoing signal, exerting sufficient forward force to enable the echo to be returned centrally with the same strength as the transmit patter. Its size is also important. The transducer is tailored to the lobe pattern or acceptance angle requirements of the transmit and receive sections. It is also matched to the focal length of the SX-70 optics, including the addition of the SX-70 Tele-lens. In addition to the transducer, three major electronic sections give life to the automatic focusing system: a circuit containing a crystal-oscillator clock and digital circuit with a counter; an analog circuit composed of a transformer, amplifier, and filter; and a power section which contains the focus motor-drive transistors.

Manufacturing: The company's new battery assembly plant in Waltham, Massachusetts, commences operation.

A **subsidiary** is formed in Ireland.

Corporate Culture: Seven percent of all salaried employees are from minority groups and 14% are women. Seventeen percent of hourly employees are minority members and 37% are women.

Facilities: Construction begins on a camera assembly plant in Andover, Massachusetts. A new battery assembly plant goes into production in Waltham, Massachusetts. New distribution centers are built in Dallas, Texas, and Santa Ana, California.



The Player automatically processes the Phototape cassette and is then viewed. Polavision is based on the additive color research Dr. Land began more than 30 years earlier. Dr. Land calls Polavision a *living image system*. The product of 10 years of intensive research, Polavision is marketed nationally this year.

Unlike the instant cameras which preceded it, Polavision never enjoys the same popular or commercial success. However, it remains a staggering scientific and technological advance.

Other products released this year include the Instant 10, Instant 20 and Instant 30 Land cameras, Pronto! Sonar One Step Land camera, Pronto! BC Land camera, Presto! Land camera, One Step BC Land camera, MemoryMaker Land Cameras, Model 600 Land cameras, Recording ID-3 camera and copier (similar to the ID-3 camera, with added Super 8 movie camera to provide file copies of all ID pictures produced), and Type 107C Land film, which makes black and white prints which do not need to be coated and has a 30-second development time and 3000 speed.

Polaroid is a sponsor of the Academy Awards.

The company collaborates with the American Film Institute to produce, in conjunction with KCET-TV, *Academy of Leaders*, 13 one-hour segments of short films. Of the three films shown in each segment, one has won an Academy Award, and others two were nominees in the short film categories.

Chemistry: The additive color process allows projection of a full-color image, although its emulsion is standard black and white emulsion and contains no color dyes. The key is an additive color screen, which consists of **a repeating pattern of microscopic stripes—red, green, blue**—at 1,000 triplets per inch. During exposure, light passes through a transparent polyester support layer to the additive color screen. Red light passes through the red stripes on the additive screen, green light passes through the green stripes, and blue light passes through the blue stripes.

The light that gets through the screen continues through a positive receiving layer, a release layer, and two protective layers, finally exposing the silver halide grains in the emulsion layer. In the additive color system, white is formed by the combination of red, green and blue light; no positive image silver is deposited over the red-green-blue stripes. Conversely, black is formed when a positive image silver covers the stripes; no light is transmitted through the screen.

Improvements are made in the chemistry of the SX-70 film, and the elapsed time for picture development is cut in half.

Personnel: Howard Rogers is elected Senior Vice President. Milton Dietz is elected a member of the Management Executive Committee. A. Derek Jarrett and Joseph McLaughlin are elected Vice Presidents, International. Dr. Stanley Bloom, Senior Vice President and Associate Director of Research, dies. I.M. Booth is appointed Senior Vice President responsible for Polaroid's worldwide manufacturing operations.

Net US Sales.....$817,400,000
Net Int Sales.....559,200,000
Net Earnings.....118,400,000
Employees.....20,884

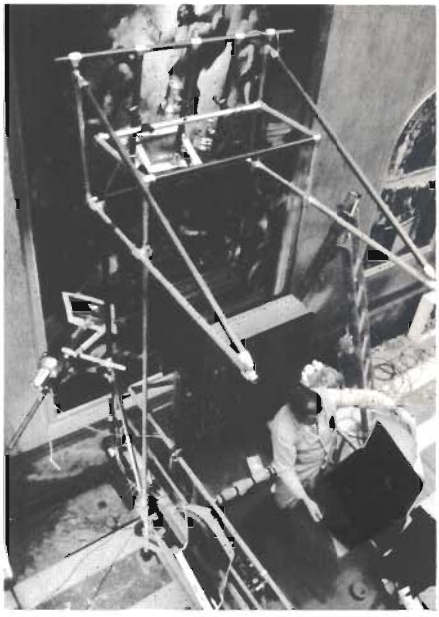
World Events

The first test-tube baby is born in England.

Soviet cosmonauts spend a record 139 days and 14 hours in space.

1979

The Vatican Museum exhibits close-up magnified views of **Raphael's** ***Transfiguration.***



The reproductions are made with Polaroid Ultra Large Format Photography (20x24-inch).

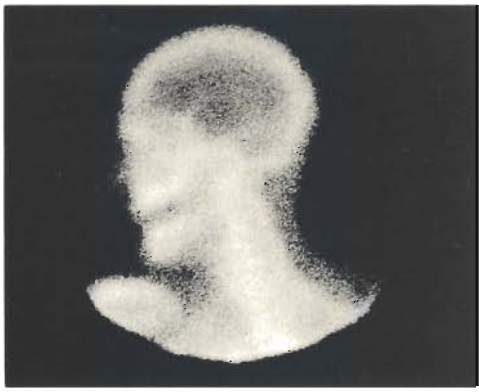
Chemistry: Time-Zero film utilizes the same chemistry as the SX-70 film except that the polymeric acid layer and the *time modulating* layer are removed from the positive sheet and placed below the negative. This results in brighter colors and whites. Also on the surface of the positive sheet a new polymeric layer (developed by

Corporate Culture: Polaroid's most conspicuous internal program is in education. Classes are conducted, often on company time, in everything from basic English to advanced chemistry. Polaroid's commitment to developing human resources is exemplified by a Tuition Assistance Plan. Over 2,000 employees enroll in company-sponsored educational courses. This plan is part of the Education Program initiated in 1956. Seven percent of all salaried company members are from minority groups, and 15% are women. Sixteen percent of hourly employees are minority members, and 37% are women.

Environment: A new film coating facility with innovative solvent air exhaust control technology begins operations with significant energy savings and recycling of over 90% of the chemical solvents used in the coating process.

A **subsidiary** is formed in Spain.

Manufacturing: Polaroid's second chemical facility at Freetown, Massachusetts, begins chemical production. The new camera plant located in Norwood, Massachusetts begins camera assembly in the spring.



Polaroid Type 611 video image recording film is introduced for use with medical diagnostic systems (shown is an emission CT scan of a brain). Two auto-focusing cameras are also released: the new SX-70 Polasonic Autofocus is a compact folding camera that offers single lens reflex viewing, focus preview, and SX-70's advanced electronics. The Model 5000 Land camera is a nonfolding sonar autofocus camera with Galilean viewfinding and Polatriplet lens. Dr. Land demonstrates Time-Zero film. It is a brilliantly colored film for the SX-70 that produces an image visible in seconds and a developed print in $1\frac{1}{2}$ minutes. Time-Zero is the world's fastest developing film and is designed to be used in any camera which accepts SX-70 film.

Liv Ullmann becomes Polaroid spokesperson for Sonar OneStep cameras. *One of a Kind*, the first major national touring exhibition of Polaroid photography, includes the work of David Hockney, Joel Sternfeld, and Arnold Newman. *20x24 LIGHT* is organized by Polaroid in cooperation with the LIGHT Gallery in New York.

Polaroid) clears the opacifiers immediately, but on the viewing surface. This allows the viewer to see the image emerging against a totally white background. All subsequent integral films will use this principle. A total reconstruction of the components makes it possible to cut the time it takes the image to emerge to a minute and a half.

Dr. Land is awarded the Gold Medal of the Society of Photo-Optical Instrumentation Engineers. He also receives the Golden Omega Award.

Net US Sales	$757,200,000
Net Intl Sales	$604,300,000
Net Earnings	36,100,000
Employees	18,416
Shareholders	37,951

World Events

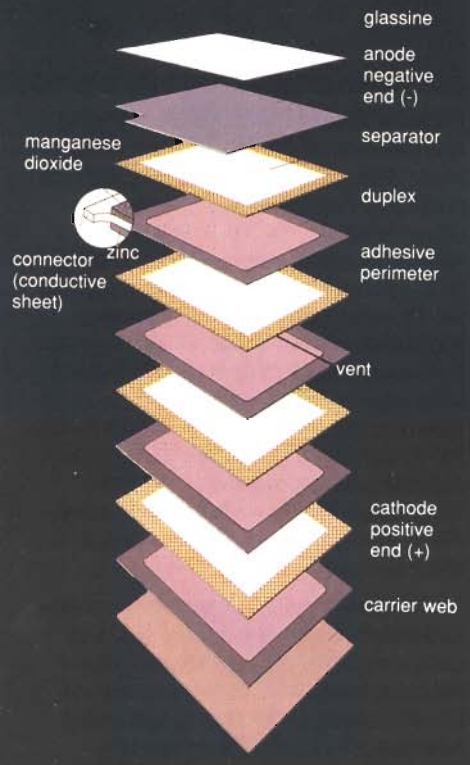
Voyager I space craft comes within 172,500 miles of Jupiter and relays a wealth of information.

Egypt and Israel sign peace treaty.

Khomeini demands power, blasts US.

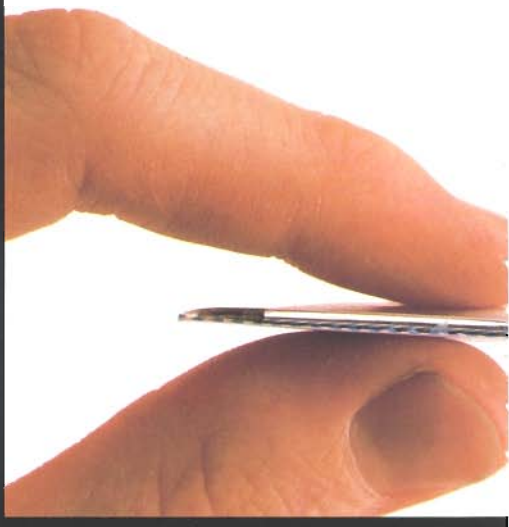
1980

The **Polapulse P100 battery**, first developed for SX-70 film, is introduced for commercial applications.



Engineering: The Polapulse P100 battery is a laminated stack assembly of four zinc manganese dioxide cells. The top sheet is an aluminum anode collector with conductive plastic laminated to its underside. A zinc layer is coated on this conductive sheet.

Polaroid puts together a kit consisting of five Polapulse P100 batteries and a molded battery holder with external connections. The kit is produced to help design engineers and product designers decide how to best use the Polaroid Polapulse battery in their devices and inventions.



Next there is a separator of nonwoven synthetic fibers and a duplex sheet. The duplex is conductive: the top is coated with manganese dioxide, the bottom is coated with zinc. Thus the first cell is zinc (on the underside of the top sheet), a gel electrolyte solution, a separator, electrolyte solution, and manganese dioxide (on top of the duplex sheet). The succeeding cells repeat this construction using the conductive sheets of the duplexes to electrically join them. The bottom sheet is an aluminum cathode collector with conductive plastic laminated to its topside. A manganese dioxide layer is coated on this conductive

Corporation: The company issues $125 million in principal amount of unsecured $11\frac{7}{8}$% notes due in 1990. The notes are sold to the public at a discount to yield a 12.0% interest rate. Polaroid forms its Technical Photo Division to address the specific new needs of the medical and industrial marketplaces.

Corporate Culture: Polaroid's Tuition Assistance Plan provides financial support to about 1400 hourly and salaried employees. In the US, 8% of all salaried company members are from minority groups, and 14% are women. Nineteen percent of the hourly employees are minority members, and 37% are women.

Corporate Relations: The company starts the Polaroid Education Project, which introduces instant photography into elementary, junior high school, high school, and adult education curriculum programs.

Environment: Polaroid initiates plans for a facility which will reclaim solvents for use in the company's chemical manufacturing operations. Solid waste recycling programs are also expanded, with particular emphasis on the reclamation of silver and petroleum-based materials such as plastics.

Sonar transducers are applied to distance-ranging and object-detecting devices. These will result in a series of moderately successful non-photographic products. Capitalizing on its knowledge of polymer technology, Polaroid introduces Polacure 740M, a curing agent for urethane polymers.

Polaroid joins the National Endowment for the Humanities and the Corporation for Public Broadcasting in providing funds for *Odyssey*, the first American television series about anthropology and archaeology.

Several new products are demonstrated at Tech Expo, an exposition of over 50 Polaroid scientific, technical, medical, and commercial applications of Polaroid instant photographic materials. Some new products are Polaroid Colorgraph film Type 891, the Polaprinter, and a new 4x5 professional pack film system.

sheet. A vent in the second duplex sheet permits only gasses to escape. When the cells are assembled, an adhesive perimeter on each separator seals the battery. A protrusion of the aluminum top sheet wraps around the bottom, so the negative and positive contacts are on the same side. Glassine and carrier webs are used for insulation, and the entire battery is encased in a paper/polyester overwrap.

Personnel: Land steps down as Chief Executive Officer in favor of William McCune. Land continues as Chairman of the Board and assumes the new position of Consulting Director of Basic Research in Land Photography. The change is made at the request of the Board of Directors. I.M. Booth is elected Executive Vice President and Director, Worldwide Photographic Operations. Also elected Vice Presidents are: Sheldon A. Buckler (Nonphotographic Products Worldwide), Peter Wensberg (Director of Industrial and Technical Photography), Richard W. Young (Director of Worldwide Marketing). Howard G. Rogers, Senior Vice President, is appointed Director of Research. Also appointed Senior Vice Presidents are Milton S. Dietz (Engineering) and Harvey H. Thayer (Finance). Six Vice Presidents are assigned new areas of responsibility: George H. Fernald, Jr. (Industrial and Technical Photography), Christopher C. Ingraham (New Business Development), A. Derek Jarrett and Joseph McLaughlin (International Marketing), Murray Swindell (North American Marketing), Theodore Voss (Marketing Communications). Robert Delahunt and Peter Kliem are appointed as Vice Presidents. Edward Bedrosian is appointed Treasurer. William O'Neill is appointed Corporate Controller. Owen Gaffney and Gerald Sudbey are appointed Assistant Vice Presidents, and Lloyd D. Taylor is appointed Senior Research Fellow. Assistant Vice Presidents John T. Harlor (Corporate Personnel) and Harold S. Page (Director of Quality Assurance) receive new assignments. Otto E. Wolff relinquishes his title of Vice President but retains his position as Senior Engineering Fellow. Paul Sullivan retires as Vice President, Purchasing.

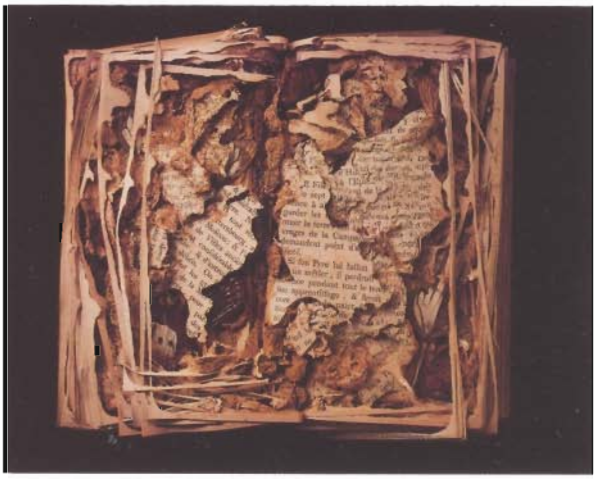
Sales: Camera sales are down to 6.6 million units in 1980, compared to 7.3 million units in 1979.

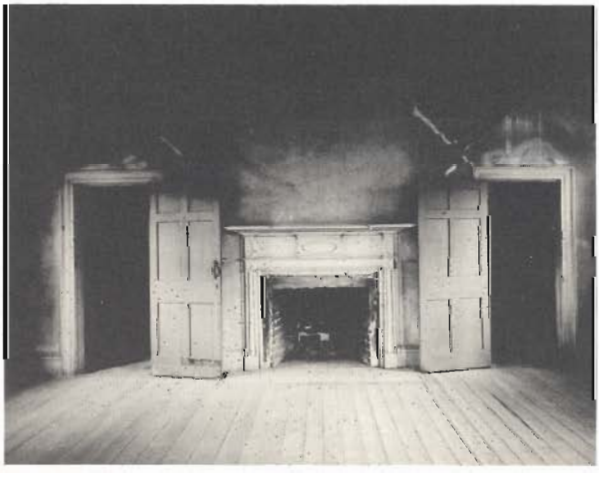
Dr. Land becomes an honorary member of the Institute of Electrical and Electronics Engineers. He is named New England Inventor of the Year and also receives the Dudley Wright Prize and Award. Brandeis University honors him with a Doctorate of Science. Land founds the Rowland Institute for Science, a private nonprofit institution organized for the purpose of engaging in basic scientific research.

Net US Sales.....$792,000,000
Net Intl Sales.....659,000,000
Net Earnings.....85,400,000
Employees.....17,454

The Boston Globe

It's Reagan, coast to coast





Rosamond Purcell
Untitled, 1980
Polaroid Polacolor 2 8x10
Land Film Type 808
Polaroid Collection

Nubar Alexanian
Mansion, Cloverdale, Virginia, 1972
Polaroid Pos/Neg 4x5 Land
Film Type 55
Polaroid Collection

I think my dress is becoming
I always try to look well
When I stop fixing my hair and dressing up
then they should start worrying and put me in a box

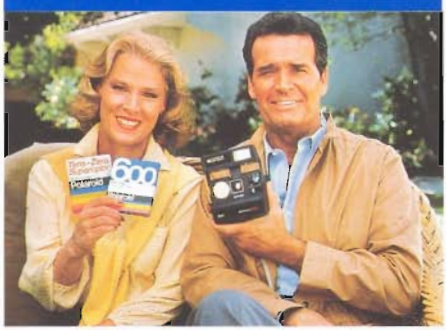
I pretend that I feel better than I am.
I feel miserable
Pain does something to my system
It can make one hateful
It's an ugly thing.
I pray to God every day to help me accept whatever is in store
so that I won't become bitter.

No one wants to hear my woes - they have their own.

Clotilde Sousa

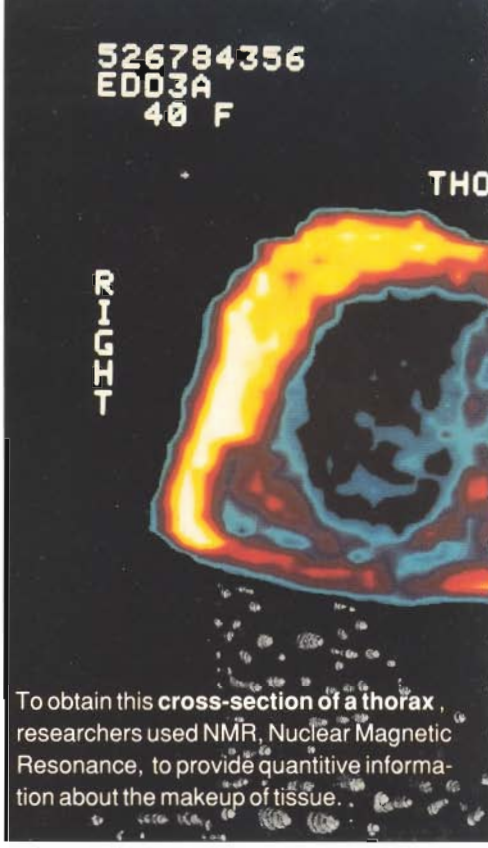
Jim Goldberg
Nursing Home Series, Cambridge, Massachusetts. 1985-86
Polaroid Pos/Neg Pack
Film Type 665
Polaroid Collection

1981



The Polaroid Sun System brings the domain of automatic light mixing to amateur picture taking.

Improvements and new products continue to expand the many ways consumers can use instant photography. The Sun System includes the **Autofocus 660 Sun camera**, the 650 Sun camera, the 640 Sun camera, and **Type 600 Land color film** (shown by Mariette Hartley and James Garner). The Polaroid Instant 600 System employs built-in electronic flash in every picture-taking situation to automatically blend strobe light and ambient light for a more precise exposure. A manual strobe bypass permits nonflash pictures for special effects. Polaroid 600 Land film becomes the highest speed instant color film in the world. The Autofocus 660 Land camera combines an ultrasonic echo-ranging autofocus system, sophisticated digitized-pulse electronic circuitry and a regulated inductive-storage strobe for fully automatic instant photography with Polaroid's 600 high-speed film. Digitized ranging data also control the camera's electronic follow-focus system for optimal flash exposure. A high-speed motor and gear train, like those in earlier SX-70 cameras, ejects the developing print.



To obtain this **cross-section of a thorax**, researchers used NMR, Nuclear Magnetic Resonance, to provide quantitive information about the makeup of tissue.

Other new products include

an 8x10 film processing system, the Time-Zero SX-70 Autofocus camera, the Time-Zero

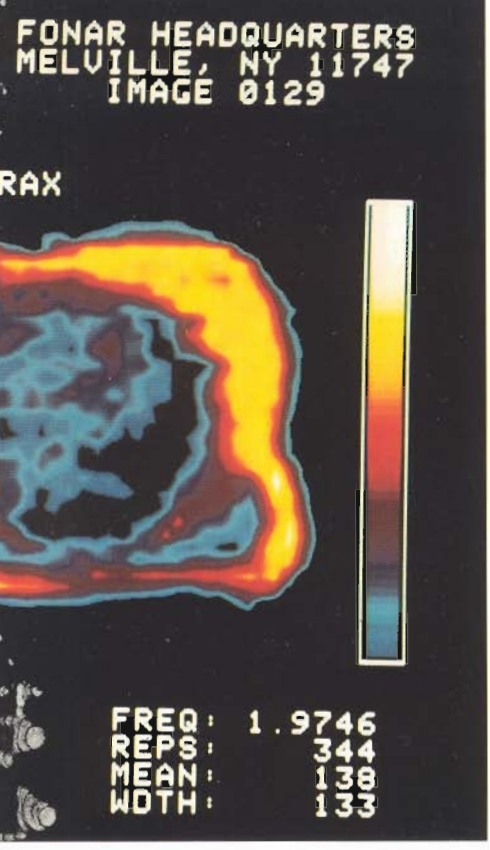
Chemistry: Two new layers below the red-sensitive and blue-sensitive silver halide emulsions are added to increase the efficiency of light utilization. Polaroid also makes significant modifications in the film's basic ability to respond to actinic radiation: a modest increase in grain size, a novel spectral sensitizer, and a little more silver are combined to create a color print film of the highest sensitivity.

Optics: Autofocus: data from the range-finding transducer dictates which of four supplementary lenses on a rotating disk combines with the camera's primary f/10 lens to match one of four focus zones between two feet and infinity. The fixed-focus 640 camera features a single-element f/14 aspheric meniscus lens for sharper pictures from four feet to infinity.

Sales: Technical and industrial business represent 25% of net sales.

Corporation: Polaroid's Diversified Products group begins offering advanced optical design and high-precision plastics molding services to original equipment manufacturers and the electronics and telecommunications fields.

Personnel: I.M. Booth is elected Chief Operating Officer. John P. Burgarella is elected Senior Engineering Fellow. Otto E. Wolff, Senior Engineering Fellow, retires. Polaroid's personnel population decreases 11%, partly due to a voluntary severance program.



Pronto! Autofocus camera, the Time-Zero One-Step camera, and the Time-Zero One-Step Plus camera. The Button, an instant camera using Time-Zero film, is introduced in March. Polaroid Colorgraph 8x10 Land film (**Type 891**) becomes the first instant color transparency film for overhead projection. The Pola-printer Slide Copier, a tabletop slide copier for making instant color and black and white prints, and black and white negatives from 35mm slides, is introduced. Polaroid also releases a new 4x5 eight-exposure pack film system, which includes the Model 550 4x5 film holder, PolaPan **Type 552** black and white film and Polacolor 2 Type 558 color film.

Type 612 Land film, an ultrasensitive instant black and white pack film (ASA equivalent rating of 20,000) for high-speed oscilloscope photography and photo-instrumentation, goes on sale. Other films for technical, medical, and scientific use include **Type 669** $3\frac{1}{4}$ x $4\frac{1}{4}$ pack film and **Type 559** 4x5 pack film. Two professional films, **Polacolor ER Type 59** (4x5) and **Polacolor ER Type 809** (8x10), are released. Polacolor ER professional films have medium contrast and improved color fidelity and are marketed for a wide range of studio, scientific, and industrial applications.

Technology: In the past year, Polaroid films have been used to record images from across space, to record events too transitory for human vision, and in countless applications of microscopy and medical diagnosis with instruments which peer electronically or optically into regions of the body

Electronics: The wafer-thin, four-cell, six volt battery in the 600 film pack is an improved high-capacity planar battery designed to power the camera's film transport motor, the camera's electronics and mechanics, and the integral strobe light.

Corporate Culture: In the US, 8% of all salaried company members are from minority groups, and 14% are women. Nineteen percent of hourly employees are minority members, and 37% are women. Polaroid initiates a voluntary severance program as one of a series of actions designed to reduce employment costs and improve productivity.

Environment: A continuous distillation unit for solvent recovery goes into operation at the company's Freetown, Massachusetts, plant, with a consequent reduction in the generation of waste and manufacturing cost savings through reuse of the recovered materials. An aggressive water conservation program at the Waltham, Massachusetts, site achieves a $\frac{1}{3}$ reduction in water usage over previous years.

The Boston Globe

REAGAN SHOT; CONDITION IS 'GOOD' AFTER SURGERY

In cooperation with ABC, ABC Cable, and PBS, Polaroid underwrites a series of productions celebrating the 100th anniversary of **the Boston Symphony Orchestra.**

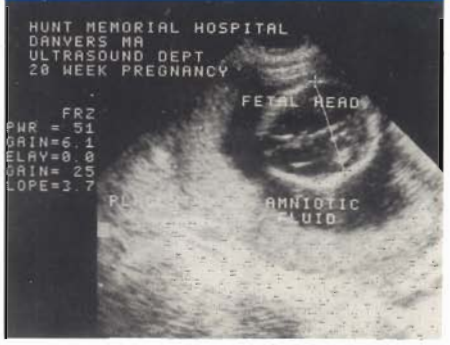
A variety of products with more technical or specialized applications are marketed.

The Polaroid CP-70 Contrast Enhancement Filter incorporates a circular polarizing filter to improve contrast and make VDT screens easier to read. The CU-70 instant close-up system for law enforcement, medical, scientific, and industrial applications includes SX-70 Land camera, Polatronic electronic flash unit, precision close-up attachments, and other accessories. The Polaroid Instant 8x10 Radiographic system enables users of X-ray equipment to expose, process, and view 8x10 radiographic transparencies quickly and easily. The Polaroid Instant Endocamera Model EC-3 records instant images through medical endoscopes using new high-speed color film.

The SX-70 Photomicrography System is introduced. It is a versatile, easy-to-use system which attaches to many microscopes and produces full-color images of microscopic subjects. Polaroid also debuts an optically unique material, Polaproof, that is virtually impossible to simulate. It can be used to deter counterfeiting of trademark products and to make tamper proof packages for drug companies. PolaSeal-MS makes a finished portrait ID card or badge that is virtually impossible to alter without detection.

The Muppets present the Time-Zero product line in a national ad campaign.

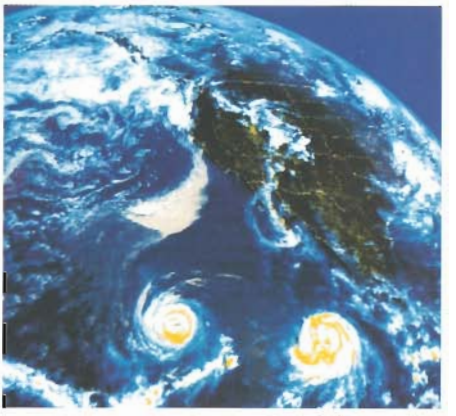
1982



Ultrasonic Ranging Systems are introduced.

They are used in areas from instrumentation testing and hospital use to robotics. The company announces the Polathane WPE family of industrial extra performance urethane elastomer plastics. The ID-3 Model 710 identification camera is also announced. Polaroid develops an expanded beam lens core for fiber optic connectors.

The company also introduces the SLR 680, a folding single lens reflex camera using 600 ASA instant color film. The camera has a built-in strobe which uses sonar to precisely determine the appropriate distance to the subject.



At the National Computer Conference the **Video Printer Model 4** debuts.

This instant color film recorder transforms computer graphics into instant photographic hardcopy. The company also demonstrates the digital image processing VideoPrinter Model 8. Polaroid begins shipments of the EC-3 endoscopic camera. The camera has become a documentation standard for endoscopic gastroenterological examination.

Polaroid obtains a 12-part British science series called *The Natural History of a Sunbeam*. It is based on England's world-famous Royal Institution Christmas lectures for children and explores the sun and its relationship to the energy of life on earth. The series is remade into 26 half-hour shows for use in schools.

Corporation: Polaroid acquires 23% of Image Resource Corporation, a California manufacturer of color film recorders. The company enters a cooperative promotion with Delta Airlines which results in a boost in fourth-quarter sales. Polaroid and its Japanese subsidiary hold TechExpo, a three-day exposition of technical/industrial products in Tokyo.

Corporate Culture: Polaroid's industrial safety record, historically better than the national average, improves 35% over the 1979-1980 average.

Personnel: In addition to his positions as President and Chief Executive Officer, William McCune is elected Chairman of the Board. Sheldon A. Buckler is appointed Director of Technical and Industrial Photography. Owen J. Gaffney is appointed Group Vice President, Worldwide Manufacturing. Joseph McLaughlin is appointed Group Vice President, Worldwide Marketing. Peter Kliem is named Assistant Director, Research. Edward Safran is appointed Assistant Treasurer of the corporation.

Environment: The EPA adopts a ruling in response to a petition by Polaroid which exempts the company from certain premanufacturing requirements of the Toxic Substances Control Act.

Subsidiaries: Mexican subsidiary is incorporated.

Dr. Land resigns as Director and Chairman of the Board to devote his full time to the Rowland Institute for Science, Inc. The company names him Honorary Chairman. He is named tenth Charles and Thomas Lauritsen Memorial Lecturer, California Institute of Technology. He receives the Ralph Lowell Distinguished Citizen Award and the 75th Anniversary Commemorative Award for the Dissemination of Scientific Understanding from the Science Museum of Minnesota.

The Boston Globe

British forces storm ashore; Argentina says attack checked

1983

The introduction of the 35mm **Autoprocess** System

makes Polaroid's instant photography products compatible with standard 35mm cameras and equipment. Autoprocess produces rapid-access color or black and white transparencies without the use of a darkroom.

Polaroid enters the computer and video industries.

Supercolor video cassettes are premiered abroad with plans for US distribution in 1984.

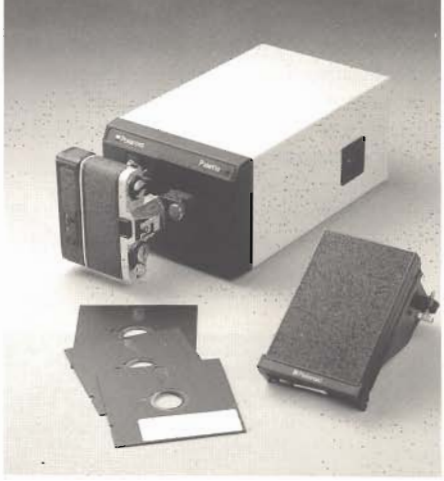
Two low-cost instant cameras, the Sun 600 LMS (Light Management System) and the OneStep 600, are introduced. Both are designed for use with Polaroid 600 high-speed color film which, when combined with the cameras' small lens apertures, provides extended depth of field for clear, detailed photographs. An improved 600 high-speed film for new, richer colors and brighter whites is also released.

Polachrome 35mm Autoprocess film for color transparencies is based on Polaroid's long-standing research into additive color systems. Like the two black and white Autoprocess transparency films also developed, Polachrome 35mm Autoprocess film can be processed in less than three minutes.

Engineering: In Polachrome 35mm Autoprocess film, each cartridge is supplied with a separate processing pack. After the film has been exposed and rewound in the camera, the cartridge and processing pack are placed in the manually operated Autoprocessor. The film self-develops in approximately 60 seconds, and the entire process is completed in less than three minutes. The slides are ready for immediate viewing, mounting, and projection.

Corporation: The company purchases 30% of Advanced Color Technology, Inc., a manufacturer of ink jet printers. Polaroid contracts with Spire Corporation for research in high-efficiency, thin film solar cells. Already a manufacturer of fiber optics connectors, Polaroid purchases nearly 100% of 1984, Inc., a fiber optics research company.

Corporate Culture: The company creates an Office of Public Affairs. Social issues such as education, employment, health, and housing in the community are a main concern of this group. A Public Issues Committee is established to assist management in developing company positions and programs of significant public concerns. Eight percent of salaried company employees are from minority groups, and 15% are women. Nineteen percent of hourly employees are minority members, and 36% are women.



Polaroid introduces **Palette**, a low-cost computer image recorder which is supplied with Polaroid graphics software. It allows the personal computer user to choose from among 72 colors in the creation of computer graphics hardcopy on Polaroid 35mm Autoprocess color transparencies and Polaroid Polacolor $3\frac{1}{4} \times 4\frac{1}{4}$-inch instant prints. Palette can be used with IBM, Apple, and DEC personal computers, providing management, sales, and marketing personnel with up-to-the-minute slides for presentation on short notice.

Polaroid also introduces an economy-priced direct-screen instant CRT camera, CR-10 (produces black and white photographs directly from the oscilloscope, video screen, and other industrial and scientific CRT displays), Polaroid Type IJT-100 transparency film (produces overhead transparencies in conjunction with Advanced Color Technology's ink jet printing system), the P500 Lithium Power Pack, CP-50 Contrast Enhancement Filter (reduces glare reflected from video display terminal screens), and Polathane XPE System 20 (a chemically stable, ether-linked elastomer).

Dinner at Julia's

Polaroid brings **Julia Child** back to public television in a new magazine-style format, *Dinner at Julia's*. In October the show ranks 8th in audience size of all the programs distributed by the Public Broadcasting Service.

Polaroid Supports Boston Area Arts and Nonprofit Organizations

Together Polaroid and Polaroid Foundation donate the equivalent of nearly 3% of the companies pretax income to non-profit organizations. The national average is 1.77%. Polaroid also becomes a founding member of the Greater Boston Arts Fund, a pilot program which will grant $6 million to cultural institutions in the Boston area.

Chemistry: Polaroid Polachrome 35mm color slide film forms images by means of an additive color silver diffusion process like that employed in Polavision. Processing fluid is evenly coated on the surface of the film as it is wound onto a reel in the Autoprocessor. A soluble silver complex formed by unexposed silver halide is converted to a high covering-power positive silver image. Rewinding the film returns it to the original cassette and peels away the top layers of the film which are wound in the disposable processing pack. The remaining finished positive silver image and the primary color filter screen constitute the finished slide, which is now ready for mounting and viewing. When light is passed through the slide, the viewed or projected image is formed by the same microscopic color filter used to record the image. The microscopic color lines are omitted in black and white Autoprocess film products.

Personnel: I.M. Booth, Chief Operating Officer, is elected President of the Company, succeeding William J. McCune, Jr., who continues as Chairman of the Board and Chief Executive Officer. Mr. Booth is also elected a Director.

Subsidiaries: Polaroid Asia-Pacific is formed.

MX panel urges Reagan to place 100 missiles in Minuteman silos

The Scowcroft commission recommended:

- Placing 100 MX missiles in existing Minuteman silos, a plan rejected by Congress last year.
- Developing a small single-warhead missile for deployment in the 1990s.

1984

Technical improvements in existing cameras lead to the **Sun 660 Autofocus** and Sun 600 LMS.

Both include integrated circuitry called SPARR (Strobe Preferred Automatic Rapid Recharge), which allows one to take pictures in rapid succession without recharging the strobe. Polaroid also debuts Autofilm Type 331 black and white positive print, Autofilm Type 336 black and white negative transparency, Autofilm Type 339 full-color positive print, as well as a camera back, a system that features the world's first self-developing, integral black and white instant films, and a self-developing integral color film. These self-developing films have images 23% larger than other Polaroid integral films and are used for a variety of medical and technical applications.

Products for use with video include the Polaroid VideoPrinter Model 48 featuring a display-driven system that transforms video signals into 8x10-inch or 4x5-inch prints, 8x10-inch instant overhead transparencies, or instant conventional 35mm slides. The company releases a line of Supercolor video cassettes in both VHS and Beta formats. Polaroid's involvement in video is not limited to creating products and technologies.

Polaroid breaks into the **flexible diskette** market with a new line of 8-inch and $5\frac{1}{4}$-inch flexible diskettes.

Community Relations: Inner City, Inc., places 130 individuals in permanent jobs in the Greater Boston area.

Corporate Culture: A first-of-its-kind Technology Readiness Program is introduced for hourly employees.

Through a skills bank, company members offer their services through the United Way's Volunteer Action Council to a variety of human services agencies.

Polaroid announces a selective, voluntary severance program in order to reduce the number of salaried employees by 400, and hourly employees by a smaller number.

Eight percent of salaried employees are from minority groups, and 15% are women. Nineteen percent of hourly employees are minority members, and 36% are women.

Honors: Polaroid and its founder, Edwin H. Land, receive awards from the American Society of Photographers for outstanding contributions to professional photography.

Arts: As part of its ongoing support of the arts, the company announces a $10,000 video art award to the artist *making a significant contribution to the art of video.*

Environment: An innovative and energy-efficient incinerator which destroys evaporated solvents at Polaroid's Waltham photographic coating process plant begins operation. It provides an 80% reduction in Polaroid solvent air emissions through the use of a variety of cost-effective control options.

Advertising: The company initiates a joint campaign with TWA, offering purchasers of Polaroid cameras and films a 25% discount on TWA flights.

Corporation: The company initiates a national network of Polaroid Film Centers to provide one-stop shopping for the company's complete line of professional cameras.

Polaroid announces a joint venture with Behringwerke AG of Marburg, West Germany, for the development of medical diagnostic systems.

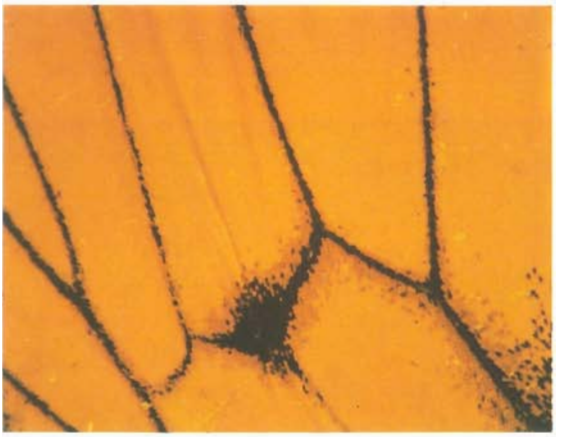
Polaroid agrees with General Parametrics Corporation of Berkeley, California, to incorporate a modified version of its Palette computer image recorder into General Parametrics' new Photomaker 150 slide-making machine.

A collaborative agreement with Toshiba Corporation of Tokyo is announced for the development of home video cameras and recording systems.

Polaroid purchases an 11% interest in National Micronetics, Inc., of San Diego, California, a manufacturer of magnetic recording heads for computer disk drives; and a 20% equity interest in Sage Technology, Inc., a California-based manufacturer of imaging products used in the printing process.

Polaroid files suit against the EPA, obtaining safeguards for confidential business information.

Polaroid's Research Microscopy Lab investigates the structure of the **butterfly wing** and the colors it exhibits. Scientists know that the color-patterns of butterfly wings can result from their structural features, meaning the interaction of light with the wing scales, and from pigmentation. The **scanning electron micrograph** magnifies the lateral spans between the veins of the butterfly wing by 15,000 times.



Sandi Fellman
A Rebours #9, 1982
Polaroid Polacolor ER
20x24 Land Film
Polaroid Collection

Technology: Polaroid demonstrates an 8mm home video recording system at the Consumer Electronics Show. The company also demonstrates Instant FIRE 300, a high-speed, color-proofing system for the printing industry, designed and manufactured under a joint agreement with MacDonald Dettweiler Technologies of Vancouver, BC.

Subsidiaries: Merganser Capital Management Corporation is established as an investment management subsidiary to manage pension and profit-sharing funds.

Personnel: Chairman of the Board of Barry Wright Corporation, is elected to the Board of Directors. Lee Brewer, Vice President, North American Marketing, is appointed Vice President, International Marketing. Peter Eichorn is appointed Vice President, North American Marketing. Peter Kliem, Assistant Director, Research, is promoted to Senior Vice President. William O'Neill, formerly Controller, is appointed Group Vice President responsible for the newly formed Consumer Photography business unit. Gerald Sudbey is promoted to Group Vice President and directs Worldwide Manufacturing. Graham Brown, Jr., is appointed Controller.

Net US Sales	$743,500,000
Net Intl Sales	528,000,000
Net Earnings	25,700,000
Employees	13,402

EARLY MORNING EXTRA

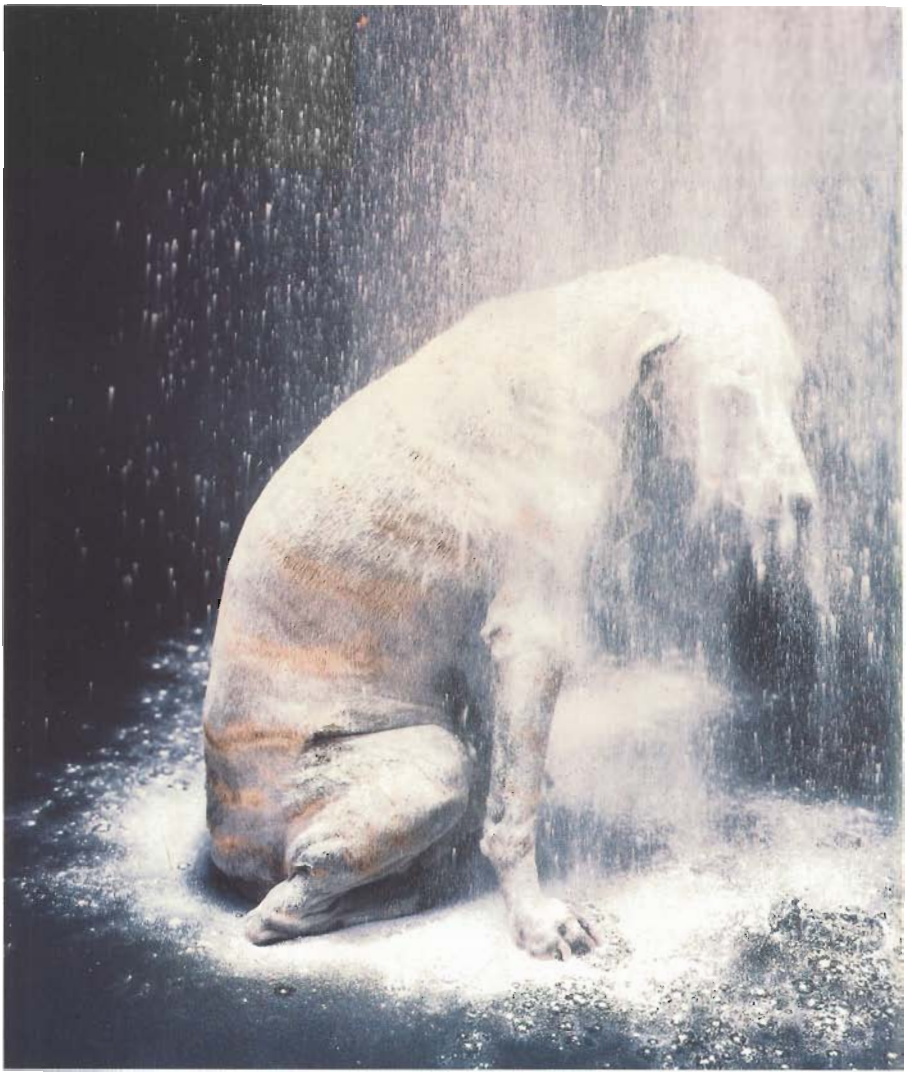
The Boston Globe

Reagan piles up 49-state victory; Kerry in strong win over Shamie

Kerry vows to continue 'campaign for peace'

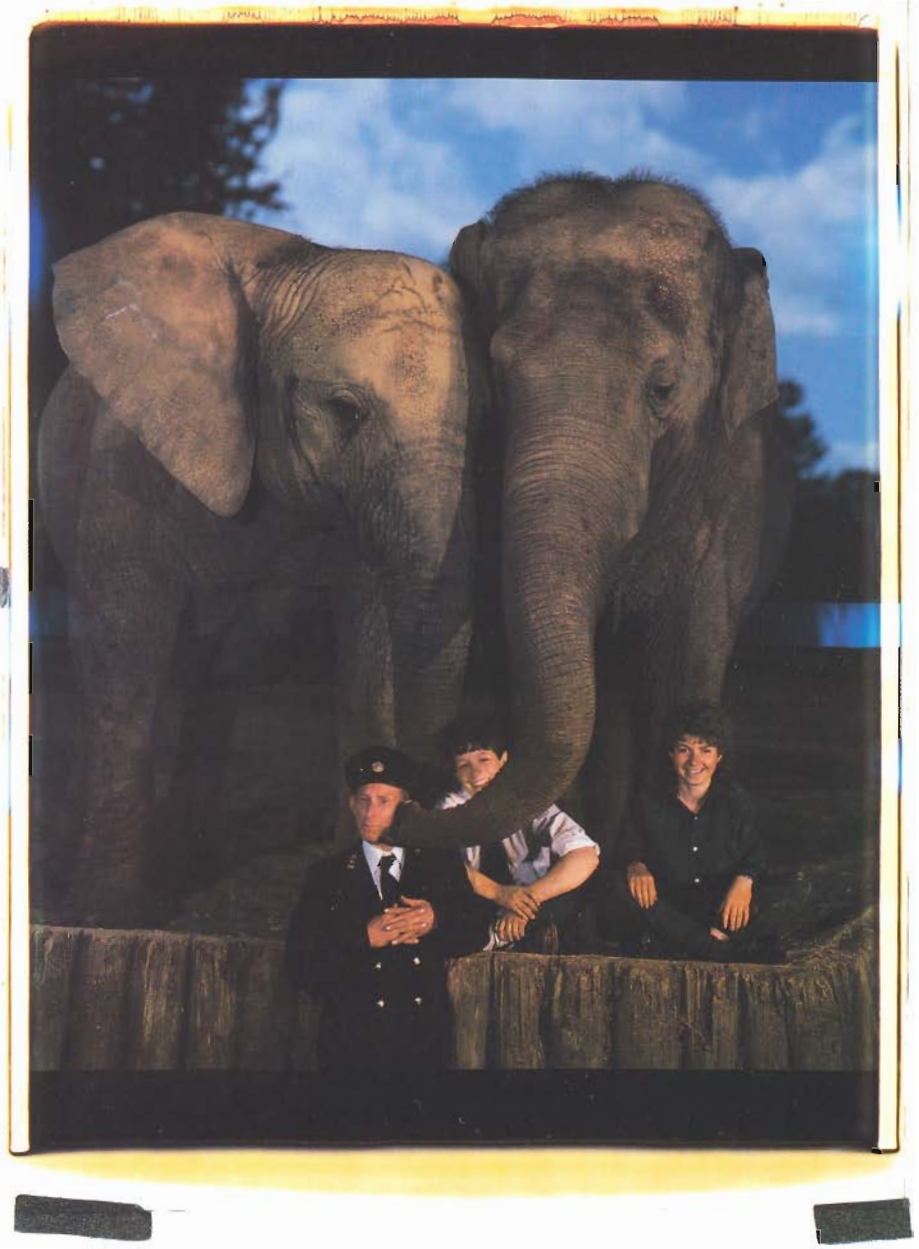
A loud 'yes' to Reagan's agenda

President wins Mass. narrowly; Mondale takes only Minn., D.C.



William Wegman
Dusted II, 1983
Polaroid Polacolor ER 20x24
Land Film
International Polaroid Collection

Jerry Uelsmann
Homage to Wegman, 1984
Polaroid Polacolor ER 20x24
Land Film
International Polaroid Collection



Neal Slavin
Elephant Keepers with Katie & Kumara, Whipsnade Park Zoo, Dunstable, Bedfordshire, 1983
Polaroid Polacolor ER 20x24
Land Film
International Polaroid Collection

1985

© **Artforum**, Summer 1985 cover, *Draw* 1975, **Lucas Samaras**

Engineering: The diffracting structure of **surface relief holograms** is relatively simple; it is a result of microscopic thickness variations in the photosensitive recording layer. Surface relief holograms are bright because they diffract light from the entire visible spectrum. This structure appears corrugated under a microscope and can be replicated by embossing a relief pattern onto a clear plastic sheet. If the sheet is then *mirrorized*, by coating with aluminum, the three-dimensional image can be viewed in reflection.

Corporation: DataRescue Data Recovery Service is established to help Polaroid diskette users recover, free of charge, data that has been lost accidentally. Polaroid settles the lawsuit against the EPA in view of new programs to ensure the confidentiality of Polaroid business information in EPA possession. The company files a registration statement with the Securities and Exchange Commission for a proposal to make a secondary offering of common stock representing 8.3% of the total shares outstanding. The shares are sold by Dr. Edwin Land, Helen M. Land, and the Rowland Foundation, Inc.

Corporate Culture: In September Polaroid's chairman and president host a 2-day employee event designed to address 5 key issues: Polaroid's business, its future growth, its financial goals, its organizational structure and products, and its corporate values. The company institutes a performance-based compensation plan for salaried members. Groups of hourly and salaried members are charged with overseeing job design experiments and recommending workplace innovations. A new system of reviewing key personnel policies and practices is adopted. The Polaroid severance program achieves its goal of reducing the company's payroll by 6%. The company also adds major new health and life insurance options to its comprehensive benefits program.

Recent developments result in the perfection of a continuous embossing process that makes **low-cost, mass-produced holograms** for commercial applications. The company announces the Polaform Process, a new custom service for the creation and mass production of embossed surface relief holograms, which can be viewed in ordinary light.

A hologram showing the inner workings of a 680 SLR camera is mass produced by the Polaform Process and affixed to the cover of Polaroid's press kit distributed at Photokina 84. Technical and industrial photographic products account for approximately 40% of the company's revenues.

The first conventional **color transparency films**, Polaroid Professional Chrome films, are distributed on a limited basis for commercial and industrial photographers.

The two films, one balanced for daylight and the other for tungsten lighting, are packaged in 4x5-inch single-shot envelopes which slide into the Polaroid Model 545 film holder. Polaroid Colorgraph Type 691 Land film debuts also, a $3\frac{1}{4}$ x $4\frac{1}{4}$-inch pack film which renders full-color overhead transparencies for use with single-pass overhead projectors.

Research: Building on its Polapulse technology, Polaroid participates in a joint research venture with the Spire Corporation of Bedford, Massachusetts, to develop solid state photovoltaic devices to efficiently convert sunlight or artificial light into electricity. In a joint venture Polaroid scientists and their colleagues from Behringwerke AG of Marburg, West Germany, begin working on the development of a new generation of simple, cost-effective, and rapid medical diagnostic systems that can perform reliably on blood or other fluid samples without need for complicated laboratory equipment or technical staff. Work on products for video recorders continues. Development and marketing continue on the Polaroid Palette computer image recorder.

Sales: New marketing strategies for Polaroid sunglasses include an agreement with Benetton, the Italian fashion house, for a collection of sunglasses (distributed worldwide) with Polaroid lenses. This agreement is part of a new marketing approach emphasizing the high fashion appeal of Polaroid sunglass products.

Subsidiaries: The company signs an agreement to buy a major portion of the assets of Verbatim Corporation's Data Encore duplication service. Polaroid increases its share of Advanced Color Technology, Inc., from 38% to 82% and also increases its equity position in Sage Technology, Inc.

Community Relations: The Company helps develop ACCESS, a program designed to encourage and advise Boston public high school students who, for financial reasons, would not have considered postsecondary education.

New plastic liquid crystal display (LCD) material, an expansion of the company's polarizer business, is released for use in place of conventional glass display. This material is flexible, shatter-resistant, and lightweight, and when combined with a proprietary Polaroid anti-reflective coating, it produces a wider viewing field and better contrast.

BBD&O, Inc., is named to provide advertising support for all consumer photographic products in the US, including the **Spectra System**.

Polaroid introduces two professional quality flexible diskettes.

One is a $5\frac{1}{4}$-inch high-density, double-sided diskette and the other a $3\frac{1}{2}$-inch micro high-density, double-sided diskette. Polaroid also releases a high-grade, high-fidelity video cassette, the VHS T-120.

The elements within the architecture of the Spectra Film

1. Transparent base
2. Mordant
3. Overcoat
4. Reagent
5. Gel
6. Blue-sensitive emulsion
7. Developing agent
8. Releasable yellow dye
9. Yellow-filter dye
10. Interlayer and silver scavenger
11. Green-sensitive emulsion
12. Spacer
13. Magenta dye and releasable anti-foggant
14. Interlayer
15. Red-sensitive emulsion
16. Spacer
17. Cyan dye and releasable anti-foggant
18. Timing layer
19. Seal coat
20. Polymeric acid
21. Negative base

Development of Spectra Film:
The instant print quality improves by combining the dye-developer with a unique dye-release chemistry. Within the film's architecture of 18 discrete layers is an entirely new yellow sandwich (the uppermost composite of layers) that operates by a dye-release process. This photochemistry is initiated by silver ions.The new processing reagent is spread in a thinner layer to produce an image of greater sharpness.

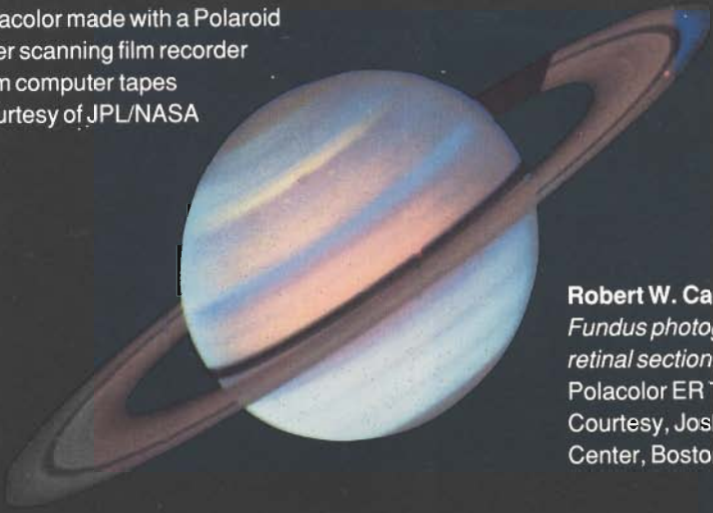
Personnel I.M. Booth, who has been President and Chief Operating Officer, is elected President and Chief Executive Officer. William McCune continues as Chairman of the Board. Alfred M. Zeien, Vice Chairman of the Board of the Gillette Company, is elected to the Board of Directors. Milton S. Dietz, formerly Senior Vice President, Engineering, is appointed Senior Vice President, Strategic Planning and Corporate Development. Peter O. Kliem, Senior Vice President and Assistant Director of Research, is named Director of Research, succeeding Howard. G. Rogers, who retires from that position in July. Howard Rogers becomes Director of Research Emeritus. George Fernald, Vice President, is appointed Vice President, Diversified Business Development.

Kodak case 'landmark' ruling for Polaroid

Late last Friday, U.S. District Court Judge Rya Zobel found Eastman Kodak guilty of infringing on seven patents held by Cambridge-based Polaroid Corp. for its instant cameras and film. It was a major victory for Polaroid and its founder Dr. Edwin Land, who had invented most of the technology himself, and who testified extensively at the trial, which had gone on for nine years. The verdict in the suit was hailed on Wall Street as vindicating Polaroid's claim that Kodak had stolen its technology, but was not regarded as having a tremendous financial effect on either company. In an interview with Herald reporter Geoffrey Smith yesterday afternoon, Polaroid vice president and secretary Richard deLima said the case may be one of the most significant in

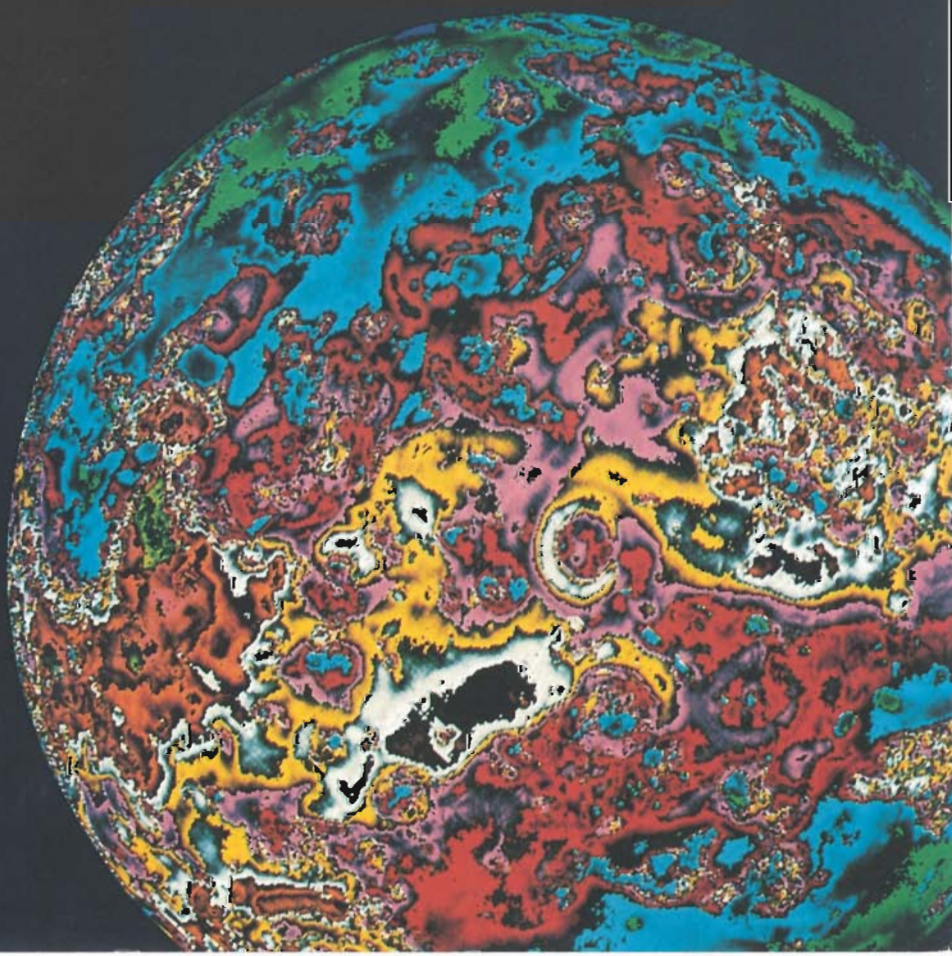
Reprinted courtesy of *The Boston Herald*

Saturn, 1983
Polacolor made with a Polaroid laser scanning film recorder from computer tapes
Courtesy of JPL/NASA



Robert W. Cavicchi
Fundus photograph of a retinal section, 1981
Polacolor ER Type 669 Film
Courtesy, Joslin Diabetes Center, Boston

Voyager Satellite
Lo, Moon of Jupiter, 1979
Polacolor 8x10-inch hardcopy, taken with Dunn instruments 631 color camera.
Courtesy of JPL/NASA



1986

The Spectra camera debuts at Jordan Marsh in Boston, thirty-eight years after the Polaroid Land camera Model 95 was introduced.

Optics: The Quintic Lens focusing system has a scale focusing length of 125 millimeters. The lens does not focus by moving toward or away from the film plane. Rather, the movable Quintic plate pivots laterally in front of the fixed Quintic element to a position determined by an electronic encoder. The unique shape of the moving Quintic plate allows the 10 areas of its surface used for focus positions to overlap each other in a continuous way so the Quintic plate does not have far to move. When the lens is in the correct focus position, the movable element is locked and the exposure is made. The entire mechanism has three elements: a highly corrected aspheric plastic meniscus main lens, a fixed Quintic element, and a moving Quintic plate. The viewfinder is also a sophisticated optical system: six precision plastic lenses and one prism with five aspheric surfaces, four mirrors to erect the image for right-side-up viewing, and a reflecting prism for viewing the data displays. Its front window has been placed close to the camera's picture-taking lens to minimize parallax when shooting subjects at close range.

Corporation: On April 25 a federal appeals court in Washington, D.C., upholds a district court ruling that Eastman Kodak Company has violated patent rights held by Polaroid Corporation in its manufacture of instant cameras and film. On October 6 the US Supreme Court denies Kodak's petition for a *writ of certiorari* to review that decision.

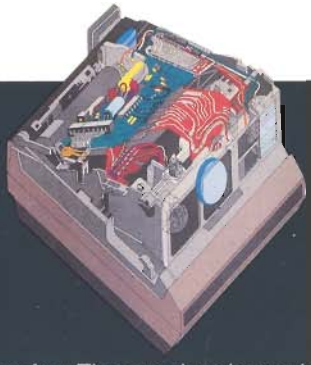
Polaroid donates Model 4 and 8 video printers, instant films, and technical assistance to space agencies and universities around the world that join in a cooperative effort to study Halley's Comet.

Corporate Culture: The company complements its existing bonus plan with a new employee incentive compensation plan—the *First Dollar* bonus plan.

Polaroid's Spectra System sets new standards of quality in instant photography and incorporates major innovations in film chemistry, optics, and electronics to produce a truer, brighter, and more saturated instant picture. The system is introduced in Europe at Photokina under the name Image System.

The final print is rectangular with an image area larger than 600 Series film.

The system is comprised of a computerized camera that focuses and controls exposure automatically; an instant color film that uses two imaging chemistries; a host of accessories, including a remote-control device; and Polaroid's laser print service, which provides computer-enhanced, laser-produced prints and enlargements. The camera's folding wedge shape mimics the natural position of a person's hands when framing a scene.



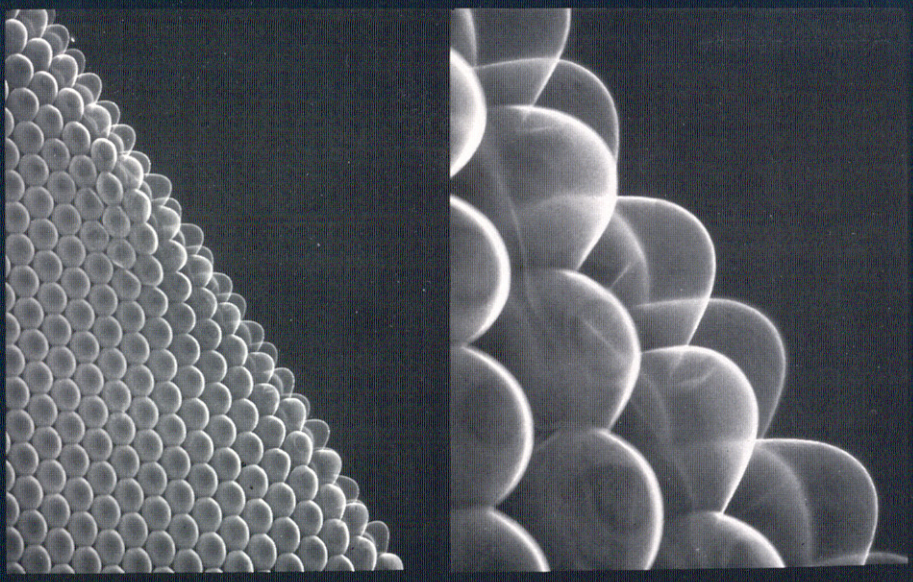
Electronics: The complex electronic circuitry of Spectra automatically and precisely blends ambient light with just the right amount of electronic strobe light to reduce harsh shadows and contrast.

Aperture follow-focus diminishes the aperture size to minimize the potential for overexposure when the camera is close to the subject. The photocell prevents excess strobe light from reaching the subject by signalling the strobe to shut off when the correct exposure is reached. The Spectra sonar transducer is 30% smaller than previous Polaroid sonar units. Spectra communicates with the photographer through a series of photographic status indicators, visible in the viewfinder once the shutter button is touched.

Sales: Two years after entering the field, Polaroid accounts for more than 10% of the US video cassette market.

Environment: Polaroid signs a consent order with the Massachusetts Department of Environmental Quality Engineering and completes the installation of equipment to achieve a 91% reduction in the emissions of volatile organic compounds from its film coating operations.

Subsidiaries: With the creation of MagMedia Limited, a diskette finishing and conversion firm, Polaroid becomes an integrated diskette manufacturer, capable of controlling the quality of its 5¼-inch diskettes from coating to finishing to packaging to distribution.



Electron micrograph of a Polaform embossed holographic optical element array, containing 25,000 cells per linear inch. The left surface is enlarged 2,000 times, the right one 10,000 times.

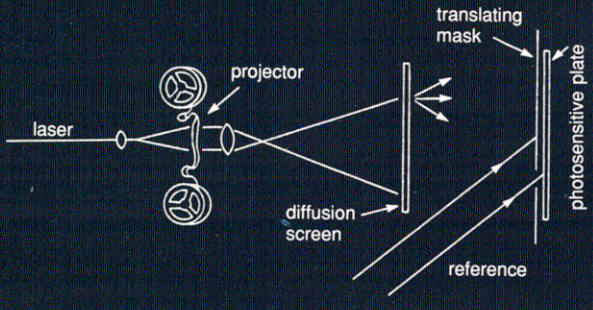


Diagram of **holographic stereogram printing.**

Technology: Polaroid demonstrates recent developments from its holography research laboratories, which have produced the world's first computer-generated, multicolored, white-light transmission hologram. The one-meter square hologram, known as *Leonardo's Vision*, is viewable in common white light.

A gallery of three kinds of holograms, all viewable in ordinary light, is exhibited: achromatic holographic stereograms, Polaform embossed holograms, and DMP-128 photopolymer reflection holograms. The last is made of a unique photopolymer film that facilitates the rapid mass production of holograms of great

Personnel: James R. Killian, Jr., retires after 28 years of service on Polaroid's Board of Directors. Peter Kliem, Senior Vice President, is named Director of Research and Engineering. A. Michael Spence, Dean of the Faculty of Arts and Sciences at Harvard University, is elected to the Board of Directors.

Honors: The corporation receives the President's Citation for Private Sector Initiative for sponsorship of Inner City, Inc. One hundred and two trainees graduate from the program in 1986. This brings the total number of participants to over 1700 since 1968, when the program began. William J. McCune, Chairman, and I. MacAllister Booth, Chief Executive Officer, are named Gold Award winners in the photography and electronic imaging industry by the *Wall Street Transcript.*

The **FreezeFrame Video Recorder** is designed and developed jointly by Polaroid and Toshiba Corporation.

FreezeFrame produces quality instant color prints or slides from video images. Polaroid expands its line of premium quality videotape with the addition of VHS T-120 High Grade and, for overseas markets, VHS E240, a 4-hour video cassette.

Polaroid Professional Chrome is more widely distributed. This 4x5-inch wet-process transparency film enables photographers to move immediately from proofing shot to final exposure without switching to cut film holders. The company introduces Type 53 and Type 553 films, the first coaterless, 4x5-inch black and white instant print films.

Convertibles provide prescription eyeglass wearers with specially designed, high-fashion polarizing lenses which attach precisely to matching eyeglass frames.

ProPack, a compact, folding electric-eye camera system incorporates an off-camera strobe unit and accepts Polaroid instant color and black and white films.

ProPack is designed to serve the needs of business users who are not professional photographers. Through Sage Technology, Polaroid introduces a color proofing system that produces true prepress representations of printed material on virtually any stock.

High Contrast Polachrome also debuts. This new special-purpose, instant color film is designed to optimize electronic 35mm imaging of computer graphics. Polachrome also increases the versatility of the Polaroid 35mm Instant Slide System and is designed for use in copystand photography and photomicrography.

clarity, brightness, and realism. The market for these photo-polymer-based holograms, known as Polaroid Mirage Holograms, expands as they are increasingly used for point-of-sale displays, packaging, and direct mail pieces.

The Boston Globe

WEDNESDAY JANUARY 29, 1986

Fiery blast destroys space shuttle; McAuliffe, six astronauts are killed

Searchers find debris, no bodies

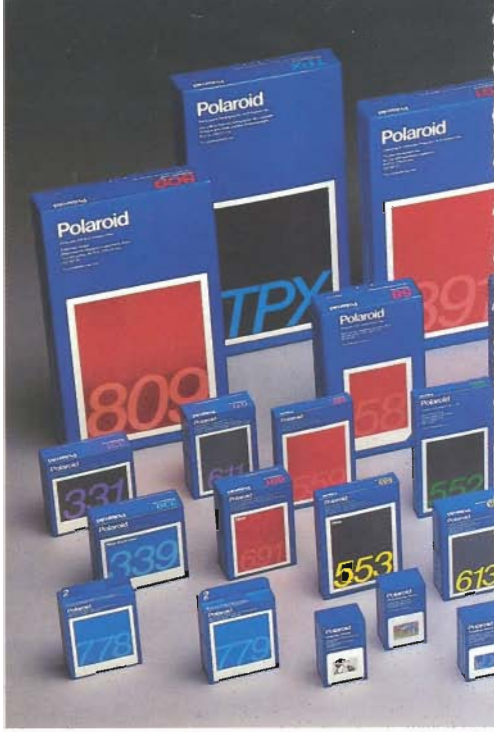
And then a child said, 'Where is it?'

Net US Sales...	$964,300,000,000
Net Int. Sales.....	664,900,000,000
Net Earnings.....	103,00,000,000
Earnings/Share.....	3.34
Employees.....	14,765

1987

Spectra System Onyx is the world's first transparent camera on the market.

Onyx incorporates all the advanced electronic and optical components of the Spectra System with a transparent onyx top and a distinctive matte black body. A Polaroid Mirage hologram is featured on the package for the Onyx camera. The hologram, created by Polaroid's holography business group, presents a three-dimensional montage of the components of the Spectra camera.



Polaroid's design department unveils new distinctive **blue packaging**, which complements the packaging of the Spectra System.

Type 803 coaterless 8x10 black and white instant film has an 800/30 ISO rating, medium contrast, and a long tonal range. This new film has a broad range of professional and industrial applications, such as advertising and portraiture, radiography and nondestructive testing.

Corporation: President I.M. Booth speaks to 9,000 employees at 17 locations in a live interactive video conference in February. Broadcast to a satellite and beamed back to locations around Massachusetts, Booth speaks and engages in a question-and-answer period about the company's Change Efforts.

The Industrial Photography Business Unit begins reorganization to expand managers' responsibility in marketing to specific business sectors.

The Polaroid Demonstration Station, a 60-foot 18-wheeler, is outfitted with a full array of professional products. The truck can take demonstrations of instant photography to the site of major professional customers such as hospitals, universities, and imaging seminars.

Community Relations: To thank its neighbors, Polaroid sponsors the *Gift of Photography* program, in which Polaroid employees participate in special events in communities where Polaroid has facilities. By photographing meaningful events in the lives of their communities, volunteer employees underscore their involvement in community affairs.

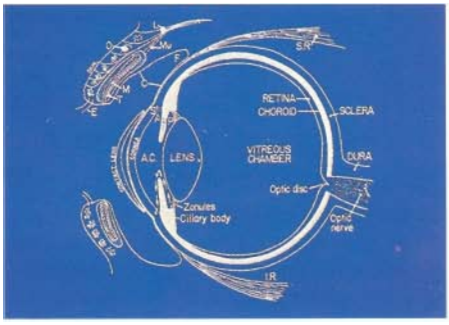
Subsidiaries: Polaroid becomes the largest software duplicator in the world with the formation of a new subsidiary called Media Duplication Services Ltd.

Sales: Polaroid signs a sponsorship agreement with Pier 39 in San Francisco to market cameras, film and photo buttons.

Corporate Culture: Polaroid is nationally rated as one of the top 40 firms for its benefits and daycare voucher system by *Working Mother* magazine. The federal government cites Polaroid as one of seven companies whose customer service represents the state-of-the-art in the 80's.

The Photo Magic System creates instant pictures with customized graphics for personalized portraits and souvenirs. Supercolor Plus introduces a premium-quality VHS T-120 video cassette with lifetime warranty.

PalettePlus Computer Image Recorder delivers high-resolution full-color instant images from personal computer systems. Producing an instant print, slide, or overhead transparency of computer-generated images, PalettePlus addresses the need for high-quality hardcopy from personal computers.



PolaBlue 35mm instant slide film produces white-on-blue images from text, line art, graphs, and charts. A four minute processing time in a Polaroid processor yields a high-quality presentation slide. PolaBlue is a negative working, orthochromatic film sensitive to blue or green light. By the use of color gels, the normal white-on-blue may be changed to produce a yellow-on-green or red-on-purple slide.

This **Doppler Color Flow Mapping image** of a normal heart during systole is captured on Polaroid High-Speed Color Autofilm Type 339.

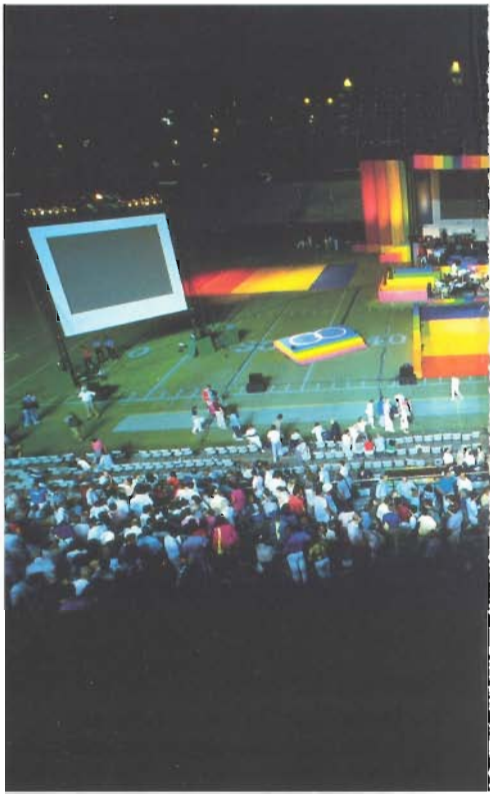
Research facilities: Polaroid designs and builds custom microelectronic light-sensing and light-emitting devices for future imaging systems within its new Microelectronics and Materials Center in Cambridge, Massachusetts.

Project Bridge is founded to combat a nationwide shortage in math and science teachers. A joint effort of Polaroid and Lesley College, the program is aimed at industry professionals in technical fields who would like to pursue a second career in teaching. Polaroid, in partnership with Lesley and Harvard University, intends Project Bridge to be a national model in helping to prepare young people for challenging careers in science.

Polaroid's 50th anniversary is highlighted by a year-long, nationwide program of activities in science, education, the arts, and the community.

A new six-part television series, *The Ring of Truth*, premieres on public television stations, produced with major funding from Polaroid. Created by MIT physicist Philip Morrison, the series encourages viewers to think for themselves and generate their own questions about the inner workings of science. Continuing a long tradition of support for public television, *The Ring of Truth* joins other Polaroid-supported programs such as *Nova*, *World*, *Odyssey* and *The French Chef*.

Legacy of Light, both a major exhibit of photography and a companion book, presents the first pictorial history of Polaroid photography. The project includes more than 150 prints by master photographers, that illustrate the full range of photography from portraits to photojournalism, from still life to street photography. Representing 60 artists, the photographs come from private and museum collections and from the photographers themselves. The 256-page book includes text by five well-known writers and critics. The exhibit premieres at the International Center of Photography in New York and later travels to other sites, including the National Portrait Gallery in Washington, DC.



The Anniversary Festival brings together thousands of Polaroid families at **Boston College's Shea Field.**

Steve Allen, Mariette Hartley, and the Pointer Sisters host the evening's salute to employees. By sunset the show inside Alumni Stadium has begun, with performances by fife and drum

Community Relations: A three-million-dollar program for elementary schools is announced by the Commission on the Bicentennial of the US Constitution, the National Association of Elementary School Principals, and Polaroid. More than 58,000 public, parochial, and independant elementary schools will receive Polaroid's *You and the Constitution*, consisting of detailed curriculum materials for primary and intermediate schools, two school posters, a Constitution version of Polaroid's Sun LMS camera (with *Constitution* logo and seal), Polaroid film, and teacher guidelines on how to best utilize the materials. **President I.M. Booth presents the first Constitution camera and education program** as *a gift to the nation's schools* to Chief Justice Warren E. Burger, chairman of the commission.

A symposium sponsored by Polaroid on Industrial Research and Development and US Technological Leadership is held on November 10 at the National Academy of Sciences in Washington, DC. More than 250 scientists, business executives, and top government officials come together to examine the future of American technological leadership and the role of industry in shaping tomorrow's breakthroughs. The symposium is aimed at developing the best strategies to help American industries take the lead in commercializing the inventions of the future.

4,500 employees and their families attend the opening of the new East Wing of the Museum of Science in Boston and witness the unveiling of a 25-foot high mural that traces the history of human communication using colors and designs that can be seen only by the use of polarizing filters.

corps, a brass quintet, and a church choir. The Polaroid *Pride and Joys*, 50 sons and daughters of company members, steal the show with a spirited dance number. With videos, greetings from around the world, and happy birthday messages, the Pointer Sisters are joined by a team of sky divers who parachute into the stadium. Over 200 Polaroid employees donate time to help make the festival a success.

"In its first 50 years, Polaroid has had an impact on society in a number of ways, through its dedication to the creation of innovative technology and through its concern for society at large." William McCune

Research: Polaroid hosts a technical symposium held before the Annual Shareholders Meeting on May 12 to present the results of Polaroid's research in imaging technologies. Polaroid scientists demonstrate innovations in such fields as organic chemistry, silver halide imaging, and semiconductor laser technology.

World Events

US celebrates the 200th anniversary of the Constitution.

The Golden Gate Bridge is 50 years old.

The stock market crashes after plunging 508 points.

Reagan and Gorbachev sign a treaty reducing the size of nuclear arsenals.

Polaroid profits rise

POLAROID Corp. yesterday said its sales and profits were up 12 percent in the second quarter.

The Cambridge company posted income of $71.3 million, 44 cents per share. Sales were up to $448.2 million. Though results were higher they fell short of projections and Polaroid's stock slipped $2.25 to $42.25 in active trading.

The company said U.S. sales were 4 percent higher than

President J. MacAllister Booth said Polaroid's Spectra System camera, greeted as "satisfied customer line," but "it has taken no longer than expected to gain the breadth of recognition we believe it deserves."

Polaroid also said it has not established a reserve for a federal jury's award of a shareholder class action suit against the company. The jury earlier this month awarded $9.75 per share to certain investors who

Polaroid celebrates 50th anniversary

Sherley Ridley
Contributing Reporter

Hundreds of retired workers, current employees and friends of employees gathered on Boston Common's eastern yesterday to kick off a $1 million bash celebrating Polaroid Corp.'s 50th anniversary.

Under a gray sky that occasionally threatened a downpour, the crowd lounged on grassy slopes and near the Boston College campus, enjoying hot dogs, soft drinks, ice cream and, of course, an anniversary cake. On a muggy August day, the outing had all the trappings and ambiance of a summertime picnic.

"It makes you think you can

family picnic," said Elizabeth Gardner, of Foxborough, whose husband is a salesman affiliated with Polaroid.

"It's great to see all the old familiar faces again, it's been fantastic so far," said Bob Ehrenson, a senior administrator who has worked for Polaroid for 29 years. "We've been looking forward to this all year."

Doris Scully, of Somerville, who retired from the company after 13 years, said she was surprised by the turnout. "It's quite a thing," she said. "I didn't think they'd have so many people . . . we can't wait for the show."

Attendance was by invitation only, limited to Polaroid employees

shirts, sandals and sneakers, did not wait for entertainment. A troupe of clowns, jugglers and singers performed stunts and skits for nearly three hours, and that was only a prelude to the show everyone had come to see, the one that featured comedian Steve Allen, the Pointer Sisters, skydivers, videos, and a laser light show at Alumni Stadium.

The traffic problems that some neighborhood residents had anticipated and complained about to city officials were not much in evidence. A small group of demonstrators gathered outside protesting what they called toxic waste pollution by Polaroid. Pam Stevens, spokeswoman for Polaroid, estimated the crowd at 20,000.

rows of metal chairs in front of the decorated stage.

Allen's opening routine was about his "old girlfriend Ruth" from high school who rode with him on his motorcycle during his school days. "Riding on Route 93, my motorcycle took a big bump and I rode on ruthlessly," he said.

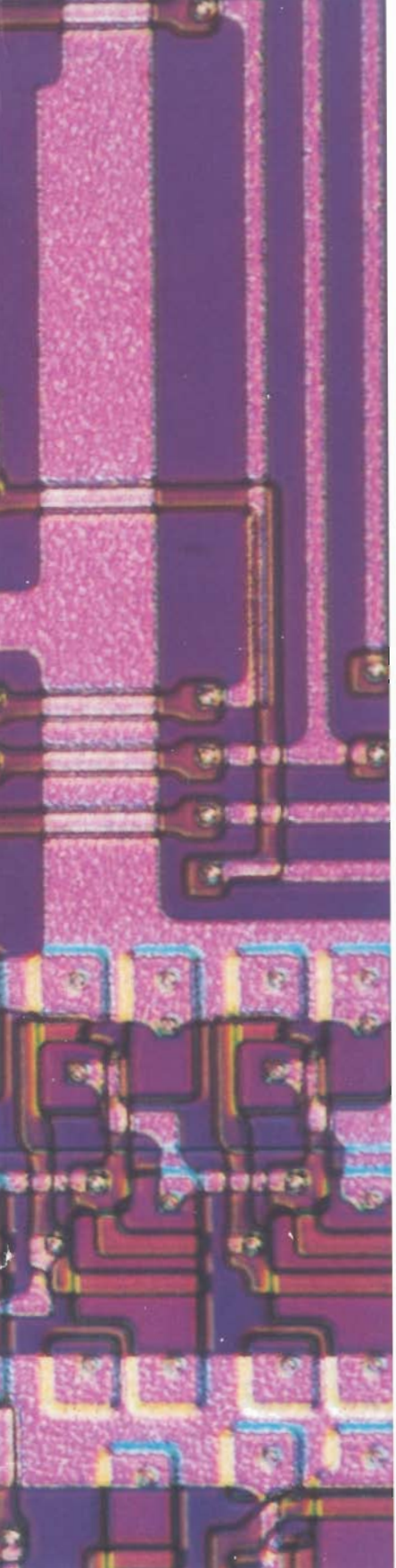
He was followed by the Pointer Sisters, who drew cheers and applause from the audience.

Lena Russo, 69, of Everett, who retired after 11 years as a camera tester, sat listening to the music. "To think we have retired and we're still part of the Polaroid family," she said.

"They gave us all this today. Was the fun tonight?" she asked

Carlos Spaventa
Birds at Market, 1982
Polaroid Time-Zero Supercolor
SX-70 Land Film
Courtesy of the artist
Polaroid Collection

Gyorgy Kepes
Untitled, 1987
Polaroid Polacolor ER
20x24 Land Film
International Polaroid Collection



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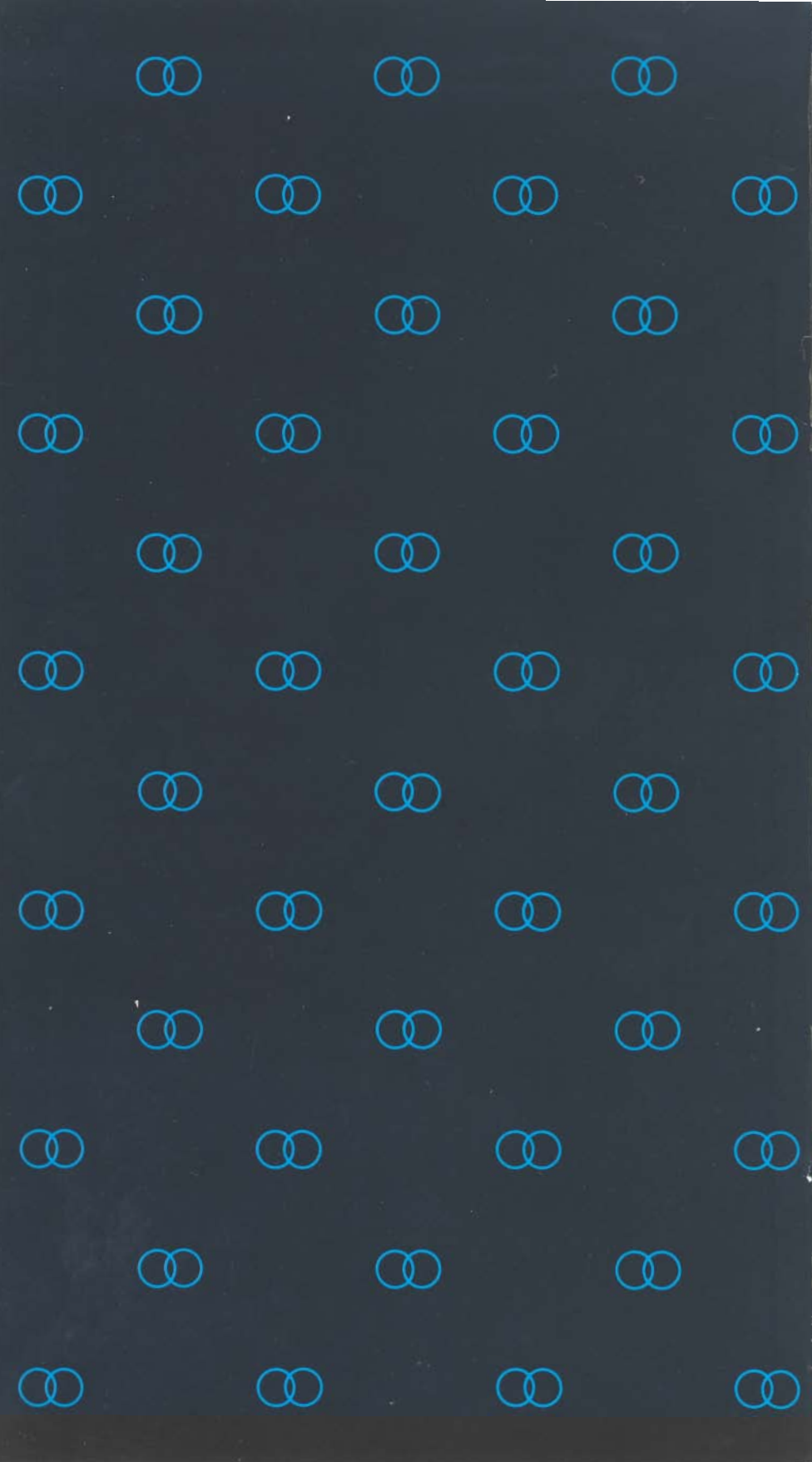
At left: A photomicrograph of a computer chip taken in 1988 with Polaroid Type 59 film, by William Saunders. The inset shows employees in the microelectronics laboratory where research in microphotography is conducted.

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